Department of Computer Science

Bachelor of Science (Computer Science)

B.Sc. (CS)

CURRICULA

Shri Vaishnav Institute of Management, Indore

Approved by AICTE, New Delhi and Affiliated to DAVV, Indore & RGPV Bhopal

UGC NAAC 'A' Grade Institute

Scheme No. 71, Gumasta Nagar, Indore

Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
As recommended by Central Board of Studies of Computer Science and
Approved by H E the Governor of M. P. (As per NEP 2020)
Session 2021-22

B.Sc. I Year Computer Science
Subject: Computer System Architecture (Major - I)

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
1.	Course Code	**S1-cosc IT**		
2.	Course Title	**Computer System Architecture (Paper)**		
3	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course. a student must have had the subject Physics/Math's in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** l . Understand the basic structure. Operation and characteristics of digital computer. 2. Be able to design simple combinational digital circuits based on given parameters. 3. Familiarity with working of arithmetic and logic unit as well as the concept of pipelining. 4. Know about hierarchical memory system including cache memories and virtual memory. 5. Understand concept and advantages of parallelism, threading, multiprocessors and multicore processors. 6. Know the contributions of Indians in the field of computer architecture and related technologies.		
6.	Credit Value	**Theory — 4 Credits**		
7.	Total Marks	Max. Marks : **25+75**	Min. Passing Marks: **33**	

PART B: Content of the Course		
No. of Lectures (in hours per week): 2 **Hrs. per week**		
Total No. of Lectures: **60 Hrs.**		
Module	**Topics**	**No. of Lectures**
l	**Fundamentals of** Digital **Electronics:** Data Types, Complements, fixed-Point Representation. Floating-Point Representation, Binary and other Codes, Error Detection Codes. **Logic Gates.** Boolean Algebra. Map Simplification. Combinational Circuits. Sequential Circuits, simple combinational circuit design problems. C**ircuits-** Adder- Subtract or, Multiplexer. Demultiplexer. Decoders. Encoders F lip - Flops, Registers, and Counters.	10

II	**Basic** Computer Organization: Instruction codes. Computer Registers, Computer Instructions. Timing & Control. Instruction Cycles, Memory Reference Instruction. Input - Output & Interrupts, Complete Computer Description & Design of Basic Computer.	10
III	Instructions - Instruction formats. Addressing modes, Instruction codes, Machine language. Assembly language. Register Transfer and **Micro** operations - Register Transfer Language. Register Transfer. Bus & Memory Transfer, Arithmetic Micro-operations. Logic Micro-operations. Shift Micro-operations.	10
IV	Processor and Control Unit - Hardwired vs. Micro programmed Control Unit. General Register Organization, Stack Organization. Instruction Format, Data Transfer & Manipulation, Program Control, Introductory concept of RISC. *C*ISC. advantages and disadvantages of both. Pipelining — concept of pipelining. introduction to Pipelined data path and control — Hand ling Data hazards & Control hazards.	10
V	Memory and I/O Systems - Peripheral Devices. l/O Interface, Data Transfer Schemes - Program Control, Interrupt, DMA Transfer. I/O Processor. Memory Hierarchy. Processor vs. Memory Speed, High-Speed Memories. Main memory, Auxiliary memory, Cache Memory, Associative Memory, Interleaving, Virtual Memory, Memory Management.	10
Vi	**Parallelism** — meaning, types of parallelism, introduction to Instruction-level-parallelism. Parallel processing challenges. Applications. Flynn's classification - Introduction to SISD, SIMD. MISD. MIMD Hardware multithreading — Introduction. types, advantages and applications. Multicore processors — Introduction. advantages, difference from multiprocessor.	8
VII	Indian contribution to the field — Contributions of reputed scientists of Indian origin - like - Dr. Vinod Dham — Father of Intel Pentium Processor. Dr. Ajay Bhatt — Co-Inventor of USB Technology. Dr. Vinod Khosla- co-founder *of* Sun Microsystems, Dr. Vijay P Bhatkar - architect of India's national initiative in supercomputing, and many others. Parallel Computing projects of India — PARAM, ANUP AM, FLO SOLVER, CHIPPS etc. Other relevant contributors and contributions.	2

Keywords/Tags: Digital Electronics. Logic Gates. Circuits, Instruction formats, Addressing Modes. Parallelism, Pipelining•, Memory Hierarchy, Multicore. Multithreading, SISD. SIMD, MISD, MIMD, PARAM, ANU PAM, FLOSOLVER, CH I PPS

PART C: Learning Resources

Textbooks, Reference **Books,** Other Resources

Suggested Readings:

- M. Morris Mano. "Computer System Architecture". PHI.
- Heuring Jordan , "Computer System Design & Architecture' (A.W.L.)
- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- » V. Carl Hamacher .' Computer Organization". TMH
- » Tannen baum, 'Structured Computer Organization", PHI .

Suggestive digital platform web lin ks :
https://www.youtube.com/watch?v=aTzMyXmzL8M
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and Class *tests.* The marks shall be as follows:		**External Assessment:** University Exam (U E) : **75 Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	10 Marks	Section (A) : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 Marks **OR** 09 x 0 1 = 09 Marks
C lass Test I **(Objective Questions)**	5 Marks		
C lass Test II **(Descriptive Questions)**	5 Marks	Section (B) : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
Class Test II I **(Based on solving circuit design problems)**	5 Marks	Section (C): Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions: Learning's in the course should be emphasized more on practical aspects and real world problems and their solutions.

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B.Sc. I Year Computer Science
Subject: Computer System Architecture Lab (Major - I)

PART A: Introduction				
Program: **Certificate**		Class: **B.Sc.**	Year: **I Year**	Session: **2021-22**
Subject: **Computer Science**				
I.	Course Code	SI-COSC I P		
2.	Course Title	**Computer Architecture Lab (Paper 1)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**		
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Math's in 12th class.		
5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Realization of the basic logic and universal gates. 2. Verify the behavior of logic gates using truth tables. 3. Implement Binary-to -Gray, Gray-to -Binary code conversions 4, Design half and full adder circuit using basic gates. 5. Design and construct flip flops and verify the excitation tables.		
6.	Credit Value	**Practical - 2 Credits**		
7.	Total Marks	Max. Marks : 25+75	M in. Passing Marks: 33	

PART B: Content of the Course		
No. of Lab. Practical's (in hours per week): **2 Hrs. per week**		
Total No. of Labs: - Up		
	Suggestive list of Practical's	**No. of Labs.**
	1. To study basic gates (AN D. O R. NOT) and verify their truth tables. 2. To convert a given binary number to Gray code using IC7486. 3. To study and verify NAN D as Universal gate using IC 7400. 4. To study half adder using basic gates and verify its truth table. 5. To study Full Adder using basic gates and verify its truth tabs e. 6. To realize basic gates (AT D. OR, NOT) from Universal gates (N and NOR). 7. To verify truth table of 4-bit adder using IC 7483. 8. To design and construct RS flip Flop using gates and verify the truth table. 9. To design and construct IK fl ip Flop using gates and verify the truth table. 10. To verify DeMorgan's Theorem.	

Keywords/Tags: Digital Electronics, Logic Gates, AND, OR, NOT, IC 7486 , IC 7400 , NANO, NOR, IC 7483 , Circuits, Flip Flop, Demerger's Theorem

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- M.Morris Mano, "Computer System Architecture", PHI.
- Heuring Jordan , "Computer System Design & Architecture" (A.W.L.)
- William Stalling, "Computer Organization & Architecture", Pearson Education Asia.
- V. Carl Hamacher , "Computer Organization", TMH
- Tannenbaum, "Structured Computer Organization", PHI .

Suggestive digital platform web links :

https://www.youtube.com/watch?v=4TzMyXmzL8M
https://nptel.ac.in/courses/106/106/106106166/
https://nptel.ac.in/courses/106/106/106106134/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105163/

PART D: Assessment and Evaluation

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment:** University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Lab Test from practical list & internal viva	12 Marks	Viva voce on practical	15 Marks
Assignments (Charts/ Model/ Seminar /Rural Service / Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	8 Marks	Table works/ Experiments	50 Marks
Total	**25 Marks**	**Total**	**75 Marks**

Any remarks/suggestions: Learning's in the course should be emphasized more on real world Problems and their solutions.

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B.Sc. I Year Computer Science
Subject: Programming Methodologies and Data Structures (Major - II)

PART A: Introduction		
Program: **Certificate**	Class: **B.Sc.**	Year: **I Year** Session : **2021 -22**
Subject: **Computer Science**		
I.	Course Code	**Sl-COSC2_T**
2.	Course Title	**Programming Methodologies & Data Structures (Paper 2)**
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Core Course**
4.	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics / Math's in 12th class.

5.	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Develop simple algorithms and flow charts to solve a problem with programming using top down design principles. 2. Writing efficient and well-structured computeralgorithms/programs. 3. Learn to formulate iterative solutions and array processingaalgorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming . 5. Will be familiar with fundamental data structure s , their implementation; become accustomed to the description of algorithms in both functional and procedural styles 6. Have know ledge of complexity of basic operations like insert, delete , search on these data structures. 7. Possess ability to choose a data structure to suitably model any data used in computer applications. 8. Design programs using various data structures including hash tables, Binary and general search trees, heaps, graphs etc. 9. Assess efficiency tradeoffs among different data structure implementations. 10. Implement and know the applications of algorithms forsearching and sorting etc. 11. Know the contributions of Indian's in the field of programmingand data structures.
6.	Credit Value	**Theory - 4 Credits**
7.	Total Marks	Max. Marks: **25+75**] Min. Passing Marks : **33**

PART B: Content of the Course		
No. of Lectures (in hours per week): **2 Hrs. per week**		
Total No. of Lecture s: **60 Hrs.**		
Module	**Topics**	**No. of Lectures**

I	**Introduction to Programming** - Program Concept, Characteristics of Programming, Stages in Program Development, Algorithms , Notations, Design , Flowcharts, Types of Programming Methodologies. **Introduction to C++ Programming** - Basic Program Structure In C ++, Data Types, Variables, Constants, Operators and Basic I/0 . **Variables** - Declaring, Defining and Initializing Variables, Scope of Variables , Using Named Constant s, Keywords, Casting of Data Types, Operators (Arithmetic, Logical and Bitwise) , Using Comments in programs, Character 1/0 (getc, getchar, putc, putchar etc.), Formatted and Console 1/0 (printf() , scanif(), cin, cout), Using Basic Header Files(stdio.h , iostream.h, conio.h etc.) **Simple Expressions in C++** (including Unary Operator Expressions, Binary Operator Expressions), Understanding Operators Precedence inExpressions **Conditional Statements** if construct, switch-case construct.	8
II	**Iterative Statements** while, do - while, and for loops, Use of break and continue in Loops, Using Nested Statements (Conditional as well as Iterative) **Functions** Top-Down Design , Pre-defined Functions, Programmer - defined Functions, Local Variables and Global variables , Functions with Default Arguments, Call- By- Value and Call- By-Reference Parameters, Recursion . **Introduction to Arrays** - Declaration and Referring Arrays, Arrays in Memory, Initializing Arrays . Arrays in Functions , Multi-Dimensional Arrays.	10
III	**Structures** - Member Accessing , Pointers to Structures , Structures and Functions, Arrays of Structures. **Unions** - Declaration and Initialization. **Strings** - Reading and Writing Strings, Arrays of Strings , String and Function, Strings and Structure, Standard String Library Functions. **Searching Algorithms** - Linear Search, Binary Search. **File Handling** - Use of files for data input and output , merging and copying files.	8
IV	**Data Structure** - Basic concepts, Linear and Non-Linear data structures	12

	Algorithm Specification-Introduction, Recursive algorithms, Data Abstraction , Performance analysis. **Linked List** - Singly Linked Lists, Operations, Concatenating, Circularly linked lists- Operations for Circularly linked lists, DoublyLinked Lists- Operations. **Array** - Representation of single , two dimensional arrays, sparse matrices-array and linked representations. **Stack-** Operations , Array and Linked Implementations, Applications- Infix to Postfix Conversion, Postfix Expression Evaluation , Recursion Implementation.	
V	**Queue-** Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Desuetude (DoubleEnded Queue), Priority Queue- Implementation. **Trees** - Representation of Trees, Binary tree, Properties of Binary Trees, Binary Tree Representations- Array and Linked Representations, Binary Tree Traversals, Threaded Binary Trees. **Heap-** Definition, Insertion, Deletion.	
VI	**Graphs** - Graph ADT, Graph Re presentation s, Graph Traversals,Searching. **Hashing-** Introduction, Hash tables, Hash functions, OverflowHandling. **Sorting Methods**, Comparison of Sorting Methods , **Search Trees** - Binary Search Trees, AVL Trees- Definition and Examples.	
VII	**Indian Contribution to the field** : Innovation s in India, origin of Julia Programming Language, Indian Engineers who designed new programming languages , open source languages , Dr. Sartaj Sahni - computer scientist - pioneer of data structures , Other relevant Contributors and contributions.	2

Keywords/Tags: Programming, C++, Data Structures, Expressions, Control, File Handling , Arrays, Stack, Queue , Linked List, Tree, Graph, Structure, Union, Hash , Search, Sort, Algorithm

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- Lipschutz: Schaum's outline series Data structures, Tata McGraw-Hill
- Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015
- E. Balguruswamy , "C++ " TMH Publication ISBN O-07-462038-X
- Herbertz Shiel d, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- R. Lafore, 'Object Oriented Programming C++"

- N. Dale and C. Weems , Programming and problem solving with C++: brief edition, Jones & Bartlett Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition, Cengage Learning.
- Sartaj Sahani, Data Structures, Algorithms and Applications with C++, McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Designing C++", Pearson.
- D.S. Malik, Data Structure using C++, Second edition, Cengage Learning.
- M. A. Weiss , Data structures and Algorithm Analysis in C, 2nd edition , Pearson.

Suggestive digital platform web links :

https://www.youtube.com/watch?v=BCIS40yzssa

https://www.youtube.com/watch?v=LnPwxZdW4Y^vl=en

https://www.youtube.com/watch?v=UmmlZQ5ltZw

https://www.youtube.com/watch?v=AT141CXuMKI&list=PLdo5W4Nhv31bbKJzrsKfMpo_grxuL18LU

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105151/

https://nptel.ac.in/courses/106/106/106106133/

PART D: Assessment and

Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks** Shall be based on allotted assignments and ClassTests. The marks shall be as follows:		**External Assessment:** University Exam (UE) : **75Marks** Time : **02.00 Hours**	
Assessment and presentation of assignment	10 Marks	**Section (A)** : Three Very Short Questions (50 Words Each) OR Nine MCQ Questions	03 x 03 = 09 MarksOR 01 x 09 = 09 Marks
Class Test I (**Objective Questions)**	5 Marks		
Class Test II **(Descriptive Questions)**	5 Marks	**Section (B)** : Four Short Questions (200 Words Each)	04 x 09 = 36 Marks
C lass Test Ill (**Based on solving programming problems)**	5 Marks	**Section (C):** Two Long Questions (500 Words Each)	02 x 15 = 30 Marks
Total	**25 Marks**	Total	**75 Marks**

Any remarks/suggestions: **Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.**

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B. Sc. I Year Computer Science
Subject: Office Tools & Programming Methodology Lab (Major - II)

PART A: Introduction		
Program: **Certificate** | Class: **B.Sc.** | Year: 1 **Year** | Session: **2021-22**		
Subject: **Computer Science**		
	Course Code	**S1 -COSCZP**
	Course Title	**Office Tools & Programming Methodology Lab (Paper :2)**
	Course Type (Core Course/Elective/Generic Elective / Vocational	**Core Course**
	Pre-Requisite (if any)	To study this course, a student must have had the subject Physics/Math's in 12th class.
	Course Learning Outcomes(CLO)	**On completion of this course, learners will be able to:** 1. Develop simple algorithms and flowcharts to solve a problem with programming using top down design principles. 2. Writing efficient and well- structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processingalgorithms for problems. 4. Use recursive techniques, pointer s and searching methods inprogramming. 5. Possess ability to choose a data structure to suitably model anydata used in computer applications. 6. Implementation of algorithms for searching and sorting.
	Credit Value	**Practical - 2 Credits**
	Total Marks	Max. Marks: **25+75** Min.Passing Marks: **33**

b. Using a Spreadsheet Tool

1. Design your class Time Tab le.
2. Prepare a Mark Sheet of your class result.
3. Prepare a Salary Slip of an employee of an organization.
4. Prepare a bar chart & pie chart for analysis of Election Results.
5. Prepare a generic Bill of a Super Market.
6. Work on the following exercises on a Workbook:
    a. Copy an existing Sheet
    b. Rename the old Sheet
    c. Insert a new Sheet into an existing Workbook
    d. Delete the renamed Sheet.
7. Prepare an Attendance sheet of 10 students for any 6 subjects of your syllabus. Calculate their total attendance, total percentage of attendance of each student & average of attendance.
8. Create a worksheet of Students list of any 4 faculties and perform following database functions on it.
    a. Sort data by Name
    b. Filter data by Class
    c. Subtotal of no. of students by Class.

c. Using a Presentation Tool

1. Design a presentation of your institute using auto content wizard, design template and blank presentation.
2. Design a presentation illustrating insertion of pictures, Word Art and Clip Art
3. Design a presentation, learn how to save it in different formats, copying and opening an existing presentation.
4. Design a presentation illustrating insertion of movie, animation and sound.
5. Illustrate use of custom animation and slide transition (using different effects).

6. Design a presentation using charts and tables of the marks obtained inclass.

II. **Given the problem statement , students are required to formulate problem, develop flowchart/algorithm, write code in C++, executeand test it. Students should be given assignments on following** :

I . a. To learn elementary techniques involving arithmetic operators and mathematical expressions, appropriate use of selection (if, switch , conditional operators) and control structures
b. Learn how to use functions and parameter passing in functions, writing recursive programs.

2. Write a program to swap the contents of two variables.
3. Write a program for finding the roots of a Quadratic Equation.
4. Write a program to find area of a circle , rectangle, square usingswitch case.
5. Write a program to check whether a given number is even or odd.
6. Write a program to print table of any number.
7. Write a program to print Fibonacci series.
8. Write a program to find factorial of a given number.
9. Write a program to convert decimal (integer) number intoequivalent binary number.
10 . Write a program to check given string is palindrome or not.
11 . Write a program to perform multiplications of two matrices.
12. Write a program to print digits of entered number in reverse order.
13. Write a program to print sum of two matrices.
14. Write a program to print multiplication of two matrices.
15. Write a program to generate even/odd series from 1 to 100.
16. Write a program whether a given number is prime or not.
17. Write a program for call by value and call by reference.
18 . Write a program to generate a series 1+1/1!+2/2!+3/3 !+ ---------- ---+n/ n!
19. Write a program to create a pyramid structure

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20. Write a program to create a pyramid structure

	I 1 2 123 123 4 21. Write a program to check entered number is Armstrong or not. 22. Write a program for traversing an Array. 23. Write a program to input Numbers, add them and find average. 24. Write a program to find largest element from an array. 25. Write a program for Linear search. 26. Write a program for Binary search. 27. Write a program for Bubble sort. 28. Write a program for Selection sort.	

Keywords/Tags: Programming, C++, Data Structures , if, else, for, while , do, File Handling, call by value, call by reference, recursion, Arrays , Union, Hash, Linear search, Binary search, Bubble sort, Selection sort.

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

- Problem Solving and Program Design in C, J. R. Hanly and E. B. Koffman, Pearson, 2015
- E. Balguruswamy , "C++ " TMH Publication IS BN O-07-462038-X
- Herbe rtz Shie ld, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- R. Lafore, “Object Oriented Programming C++”
- N. Dale and C. Weems, Programming and problem solving with C++: brief edition, Jones & Bartle tt Learning.
- Adam Drozdek, "Data Structures and algorithm in C++", Third Edition , Cengage Learning.
- Sartaj Sahani, Data Structures, Algorithms and Application s with C++, McGraw Hill.
- Robert L. Kruse, "Data Structures and Program Design in C++" , Pearson.
- D.S. Malik, Data Structure using C++, Second edition, Cengage Learning.
- M. A. Weiss, Data structures and Algorithm Analysis in C, 2nd edition , Pearson.
- Lipschutz: Schaum's outline series Data structures, Tata McG raw-Hill

Suggestive digital platform web links :

https://www.youtube.com/watch?v=BC1S40yzssa
https://www.youtube.com/watch?v=vLnPwxZdW4Y&vl=en
https://www.youtube.com/watch?v=Umm1ZQ5ltZw
https://nptel.ac.in/courses/106/106/106106127/

Suggested equivalent online courses

https://nptel.ac.in/courses/106/105/106105151/
https://nptel.ac.in/courses/106/105/106105171/
https://onlinecourses.swayam2.ac.in/cec19_mg35/preview

PART D: Assessment and Evaluation			
Internal Assessment : Continuous Comprehensive Evaluation (CCE) : **25 Marks**		**External Assessment:** University Exam (UE) : **75 Marks** Time : **02.00 Hours**	
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Hands-on Lab Practice	5 Marks	Practical record file	10 Marks
Lab Test from practical list & internal viva	12 Marks	Viva voce on practical	15 Marks
Assignments (Charts/ Model/ Seminar/Rural Service / Technology Dissemination / Report of Excursion / Lab Visits /Survey / Industrial visit)	8 Marks	Table works/ Experiments	50 Marks
Total	**25 Marks**	**Total**	**75 Marks**
Any remarks/suggestions: Focus of the course/teaching should be on developing ability of the student in analyzing a problem, building the logic and efficient code for the problem.			

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B.Sc. I Year Computer Science
Subject: Mathematics: Calculus and Differential Equations (Minor)

Part A: Introduction				
Program: Certificate Course		Class: B.Sc. I Year	**Year:** 2021	**Session:** 2021-2022
Subject: Mathematics				
1	Course Code	S1-MATH2T		
2	Course Title	Calculus and Differential Equations (Paper•)		
3	**Course Type**	Core Course		
4	**Pre-requisite (if any)**	To study this course, a student must have had the subject Mathematics in class 12th.		
5	Course Learning Outcomes (CLO)	The course will enable the students to: 1. Sketch curves in a plane using its Mathematical properties in the different coordinate systems of reference. 2. Using the derivatives in Optimization. Social sciences, Physics and Life sciences etc. 3. Formulate the Differential equations for various Mathematical models. 4. Using techniques to solve arid analyze various Mathematical models.		
6	**Credit Value**	Theory: 6		
7	**Total Marks**	Max. Marks: 25 + 75	Min. Passing Marks: 33	

Part B: Content of the Course		
Total No. of Lectures (in hours per week): 3 hours per week **Total Lectures:** 90 hours		
Unit	**Topics**	No. of Lectures
I	I.I Historical background: 1.1 .1 Development of Indian Mathematics: Ancient and Early Classical Period (till 500 CE) 1.1 .2 A brief biography of Bhaskaracharya (with special reference to Lilavati) and Madhava 1.2 Successive differentiation 1.2.1 Leibnitz theorem 1.2.2 Maclaurin's series expansion 1.2.3 Taylor's series expansion 1.3 Partial Differentiation 1.3.1 Partial derivatives of higher order 1.3.2 Euler's theorem on homogeneous functions 1.4 Asymptotes 1.4.1 Asymptotes of algebraic curves 1.4.2 Condition for Existence of Asymptotes 1.4.3 Parallel Asymptotes 1.4.4 Asymptotes of Polar curves	18

II	2. 1 Curvature 2. I . I Formula for radius of Curvature 2.1.2 Curvature at origin 2.1.3 Centre of Curvature 2.2 Concavity and Convexity 2.2.1 Concavity and Convexity of curves 2.2.2 Point of Inflexion 2.2.3 Singular point 2.2.4 Multiple points 2.3 Tracing of curves 2.3.1 Curves represented by Cartesian equation 2.3.2 Curves represented by Polar equation	18
Ill	3.1 Integration of transcendental functions 3.2 Introduction to Double and Triple Integral 3.3 Reduction formulae 3.4 Quadrature 3.4. I For Cartesian coordinates 3.4.2 For Polar coordinates 3.5 Rectification 3.5.1 For Cartesian coordinates 3.5.2 For Polar coordinates	18
IV	4. 1 Linear differential equations 4. 1 . 1 Linear equation 4.1.2 Equations reducible to the linear form 4.1.3 Change of variables 4.2 Exact differential equations 4.3 First order and higher degree differential equations 4.3.1 Equations solvable for x, y and p 4.3.2 Equations homogenous in x and y 4.3.3 Clairaut's equation 4.3.4 Singular solutions 4.3.5 Geometrical meaning of differential equations 4.3.6 Orthogonal trajectories	18
V	5. 1 Linear differential equation with constant coefficients 5.2 Homogeneous linear ordinary differential equations 5.3 Linear differential equations of second order 5.4 Transformation of equations by changing the dependent/ independent variable 5.5 Method of variation of parameters	18

Keywords/Tags:
Indian Mathematics, Successive differentiation, Partial Differentiation, Asymptotes, Curvature, Tracing of curves. Quadrature. Rectification, Linear differential equations, Method of variation or parameters.

Part C: **Learning** Resources
Text Books. Reference Books, Other Resources

Suggested Readings:

Text Books:

1. Gorakh Prasad: Differential Calculus, Pothishala Private Ltd., Allahabad, 2016.
2. Gorakh Prasad: integral Calculus, Pothishala Private Ltd.. Allahabad, 2015.
3. M. D. Raisinghania: Ordinary and Partial Differential Equations. S Chand A Co Ltd, 2017.
4. Gerard G. Emch, R. Sridharan and M. D. Srinivas: Contributions to the History of Indian Mathematics. Hindustan Book Agency, Vol. 3, 2005.
5. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:

1. N. Piskunov: Differential and Integral Calculus, CBS Publishers, 1996.
2. G. F. Simmons: Differential Equations, Tata McGraw Hill. 1972.
3. E. A. Codington: An Introduction to ordinary differential Equation, Prentice Hall of India, 1961.
4. D. A. Murray: introductory Course in Differential Equations, Orient Longman (India) 1967.
5. H. T. H Piaggio: Elementary Treatise on Differential Equations and their Application, C.B.S. Publisher & Distributors, Delhi. 1985.
6. Bibhutibhusan Datta and Avadhesh Narayan Singh: History of Hindu Mathematics, Asia Publishing House, 1962.

Suggested Digital Platforms Web.links:

https://epgp.inflibnet.ac.in

https://freevideolectures.com./university/iit-roorkes

https://www.highereducation.mp.gov.in/?page=xhzlQmpZwkyIQo2b%2Fy5G7w%3D%3D

https://www.bhojvirtualuniversity.com

Suggested Equivalent online courses:

hxps://nptel.ac.in/courses/1 11106100/

https://nptel.ac.in/courses/111/101/l 1110l080/

Part D: **Assessment and Evaluation**		
Suggested Continuous Evaluation Methods: Maximum Marks: t00 Continuous Comprehensive Evaluation (CCE): 25 Marks University Exam (UE): 75 Marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Test Assignment/Presentation	15 10 Total Marks: 25
External Assessment: University Exam(UE) Tme:02.00Hours	Section (A): Three Very Short Questions (50 Words Each) Section (B): Four Short Questions (200 Words Each) Section (C): Two Long Questions (500 Words Each)	. 03 x 03 = 09 04 x 09 = 36 02 x 15 = 30 Total Marks: 75

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B.Sc. I Year Computer Science
Subject: Physics: Mechanics and General Properties of Matter (Elective)

Program: Certificate	**Class:** B.Sc. I Year	**Year:** 2021	**Session:** 2021-2022
Subject: Physics			
1.	**Course Code**	S1-PHYS2T	
2.	**Course Title**	**Mechanics and General Properties of Matter**	
3.	**Course Type (Core/Elective/Generic Elective/Vocational/...)**	Core course	
4.	**Pre- requisite (If any)**	To study this course, a student must have had the subject Physics in 12th class.	
5.	**Course Learning Outcomes (C L 0)**	1. The course would empower the students to develop the idea about the behavior of physical bodies. 2. It will provide the basic concepts related to the motion of all the objects around us in daily life. 3. The students would be able to build foundation to various applied field in science and technology especially in the field of mechanical engineering. 4. The students will acquire the knowledge of basic mathematical methods to solve the various problem in physics. 5. The students will be able the understand the relativistic effect and the relation between energy and mass.	
1.	**Credit Value**	**4**	
2.	**Total Marks**	Max. Marks: 25+75	Min. Passing Marks: 33

Part B - Content of the Course		
Total number of Lectures (in hours): 60		
Unit	**Topics**	**Number of Lectures**
I	**Historical background and Mathematical Physics** **1. Historical background:** **1.1.** A brief historical background of mathematics and mechanics in the context of India and Indian culture. **1.2.** A brief biography of Varaha¯nihira and Vikram Sarabhai with their major contribution to science and society. **2. Mathematical Physics:** **2.1.** Scalar and vector fields, Gradient of a scalar field and its physical significance. **2.2.** Vector integral: line integral, surface integral and volume integral, Divergence of a vector field and its physical significance, Gauss divergence theorem. **2.3.** Curl of a vector field and its physical significance, Stokes and Green's theorem, Numerical problems based on the above topics. **Keywords/Tags:** Scalar field, Vector field, Vector integral, Gradient, Divergence, Curl.	**12**
II	**Mechanics of Rigid and deformable bodies** **1. Rigid body mechanics:** **1.1.** System of particles and concept of Rigid body, Torque, centre of mass : position of the centre of mass, Motion of the centre of mass, Conservation of linear & angular momentum with examples, Single stage and multistage rocket. **1.2.** Rotatory motion and concept of moment of inertia, Theorems on moment of inertia: theorem of addition, theorem of perpendicular axis, theorem of parallel axis, Calculation of moment of inertia of rectangular lamina, disc, solid cylinder, solid sphere. **2. Mechanics of deformable bodies:** **2.1.** Hook's law, Young's modulus, Bulk modulus, Modulus of rigidity and Poisson's ratio, Relationship between various elastic moduli. **2.2.** Possible values of Poisson's ratio, Finding Poisson's ratio of rubber in the laboratory, Torsion of a cylinder, Strain energy of twisted cylinder. **2.3.** Finding the modulus of rigidity of the material of a wire by Barton's method, Torsional pendulum and Maxwell's needle, Searl's method to find Y, ri and a of the material of a wire, Bending of beam, Cantilever, Beam supported at its ends and loaded in the middle. Keywords/Tags: Rigid body, Centre of mass, Moment of inertia, Poisson's ratio.	**12**
III	**Fluid mechanics** **1. Surface Tension:** **1.1.** Inter-molecular forces and potential energy curve, force of cohesion and adhesion. **1.2.** Surface tension, Explanation of surface tension on the basis	**12**

	of intermolecular forces, Surface energy, Effect of temperature and impurities on surface tension, Daily life application of surface tension. **1.3.** Angle of contact, The pressure difference between the two sides of a curved liquid surface, Excess pressure inside a soap bubble, Capillarity, determination of surface tension of a liquid - capillary rise method, Jaeger's method. **2. Viscosity:** **2.1.** Ideal and viscous fluid, Streamline and turbulent flow, Equation of continuity, Rotational and irrotational flow, Energy of a flowing fluid, Euler's equation of motion of a non-viscous fluid and its physical significance. **2.2.** Bernoulli's theorem and its applications (Velocity of efflux, shapes of wings of airplane, Magnus effect, Filter pump, Bunsen's burner). **2.3.** Viscous flow of a fluid, Flow of liquid through a capillary tube, Derivation of Poiseuil le's formula and limitations, Stocks formula, Motion of a spherical body falling in a viscous fluid. **Keywords/Tags:** Inter-molecular force, Surface tension, Angle of contact, Capillarity, Viscosity, Euler's equation, Poiseuil le's formula.	
IV	**Gravitational potential and Central forces** **1 Gravitational potential:** **1.1.Conservative** and non-conservative force field, Conservation of energy in motion under the conservative and non-conservative forces, Potential energy. 1.2.Conrvative force, Conservation of energy, Gravitational potential and gravitational potential energy, Gravitational potential and intensity of gravitational field due to a uniform spherical shell and a uniform solid sphere. **1.3.Gravitational** self-energy, Gravitational self-energy of a uniform spherical shell and a uniform solid sphere. **2 Central forces:** 2.1.Motion under Central forces, Conservative characteristics of central forces. 2.2.The motion of a two particles system in Central force, Concept of reduced mass, Reduced mass of positron ium and hydrogen. 2.3.Motion of particles in an inverse-square central force, Motion of celestial bodies and derivation of Kepler's laws, **2.4.Elastic** and inelastic scattering (elementary idea). **Keywords/Tags:** Conservative force field, Gravitational potential, Gravitational self-energy, Central force, reduced mass, Scattering.	**12**
V	**Relativistic Mechanics and Astrophysics**	**12**

	1. Relativistic Mechanics: 1.1.Frerne of references, Galilean transformation, Michelson - Morley experiment. 1.2.Postulates of special theory ofrelativity, Lorentz Transformation, Simultaneity and order of events, Length contraction, Time dilation, Relativistic transformation of velocities, Variation of mass with velocity. 1.3.Mass-energy equivalence and its experimental verification. **2. Astrophysics:** 2.1.1ntroduction to the Universe,Properties of the Sun, Concept of Astronomical Distance. **2.2.Life** cycle of a stars, Chandrasekhar Limit, H-R diagram, Red giant star, White dwarf star, Neutron star, Black hole, 2.3.Big Bang Theory (elementary idea). **Keywords/Tags:** Transformation, Mass-energy equivalence, Astronomical distance, Chandrasekhar limit, Black hole.	

Part C- Learning Resources		
Text Books, Reference Books, Other resources		
Suggested Readings: 1. Spiegel M. R., "Vector Analysis: Schaum Outline Series", McGraw Hill Education, 2017. 2. Mathur D. S., "Mechanics", S. Chand, 2012. 3. Ghatak A. K., Goyal I.C. and Chua S.J., "Mathematical Physics", Laxmi Publications Private Limited, 2017. 4. Mathur D. S., "Properties of Matter", Shyamlal Charitable Trust, New Delhi. Sears and Zeemansky, "University Physics", Pearson Education.		
1. Suggested equivalent online courses: 1. https://nptel.ac.in/courses/115/103/115103036/ Mathematical Physics by Dr. Saurabh Basu, Department of Physics, Indian Institute of Technology Guwahati. 2. https://nptel.ac.in/courses/115/106/115106090/ Mechanics, Heat, Oscillations andWaves byProf. V. Balakrishnan, Department of Physics, Indian Institute of Technology, Madras		
Part D-Assmsment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks : 100 Continuous Comprehensive Evaluation (CC E) : 25marks University Exam (U E) 75 marks		
Internal Assessment : Continuous Comprehensive Evaluation (CCE):25	Class Test Assignment/Presentation	15 10
xternal Assessment : University Exam Section: 75 Time : 02.00 Hours	**Section(A) :** Three Very Short Questions (50 Words Each) **Section (B) :** Four Short Questions (200 Words Each) **Section (C) :** Two Long Questions (500 Words Each)	03 x 03 = 09 04 x 09 = 36 02 x 15 = 30 Total 75
Any remarks/ suggestions:		

Part A - Introduction			
Program: Certificate	**Class:** B.Sc. I Year	**Year:** 2021	**Session:** 2021-2022
Subject: Physics			

1.	**Course Code**	**S1-PHysk**
2.	**Course Title**	**Mechanics and General Properties of Matter Lab (Paper 2)**
3.	**Course Type (Core/Elective/Generic ElectiveNocational/...)**	Core course
4.	**Pre- requisite (If any)**	To study this course, a student must have had the subject Physics in 12th class.
5.	**Course Learning Outcomes (C L 0)**	1. The students would acquire basic practical knowledge related to mechanics through the experiments. 2. Students will be familiar with various measurement devices by which they can measure various physical quantities with accuracy. 3. The students will develop the concept related to the mechanics and properties of matter.
6.	**Credit Value**	**2**
7.	**Total Marks**	Max. Marks: 25+75 Min. Passing Marks: 33

Part B - Content of the Course		
Sr. No.	**Total numbers of Practical (in hours): 60** **List of experiments**	**Number of Practical (in hours)**
1.	Determination of Young's modulus, modulus of rigidity and Poisson's ratio of material of a wire using Searle's method.	**30**
2.	Determination of Young's modulus of material of a metallic bar by bending of beam method.	
3.	Determination of acceleration due to gravity (g) using Bar pendulum.	
4.	Determination of acceleration due to gravity (g) using Kater's reversible pendulum.	
5.	Determination of modulus of rigidity of a rod with the help of Barton's apparatus.	
6.	Determination of coefficient of viscosity of liquid using Poiseuille's method.	
7.	Determination of the moment of inertia of a flywheel about its axis of rotation.	
8.	Determination of the moment of inertia of a given body (irregular body) with the help of inertia table.	

9.	Verification of laws of the parallel/perpendicular axes of moment of inertia.	
10.	Determination of modulus of rigidity of material of a wire with the help of Maxwell's needle.	
11.	Determination of Young's Modulus of a material of a rod using Cantilever method.	
12.	Determination of modulus of rigidity of material of a wire with the help of torsional pendulum.	
13.	Determination of force constant of a spring.	
14.	Determination of Poisson's ratio of rubber.	
15.	Determination of surface tension of a liquid by Jaeger's method.	

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Prakash I. & Ramakrishna, "A Text Book of Practical Physics", Kitab Mahal, 2011,11/e.
2. Squires G. L., "Practical Physics", Cambridge University Press, 2015, 4/e.
3. Flint B. L. and Worsnop H. T., "Advanced Practical Physics for students", Publishing House, 197. Asia
4. Chattopadhyay D. & Rakshit P. C., "An Advanced Course in Practical Physics", Central Book Agency. New

Suggestive digital platforms web links

2. https://storage.cpleapis.com/uniquecourses/online.html

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	**10**	**Viva Voce on Practical**	**15**
Attendance	**5**	**Practical Record File**	**10**
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)	**10**	**Table work / Experiments**	**50**
TOTAL	**25**		**75**

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B.Sc. I Year Computer Science
Subject: Digital Marketing (Vocational)

Part A Introduction		
Program: Certificate	**Year: First Year**	**Session: 2021-2022**

Course Code	**V1-COM-DIGT**
Course Title	**DIGITAL MARKETING**
Course Type	**Vocational**
Pre-requisite (if any)	Open for All
Course Learning outcomes (CLO)	**After the successful completion of the course, the student shall be able to-:** • Understand digital marketing, importance thereof, meaning of web site and levels of web site, difference between blog, portal & website. • Understand the working of SEO (search engine optimization) on page optimization, off page optimization, and will learn to prepare reports • Learn about SMO (social media optimization) like Face book, twitter, Linkedln, Tumblr, Pinterest and other social media services optimization • Understand paid tools like Google ad words, display advertising techniques • Learn and apply hands on experience on tools useful to SEO for analysis on website traffic, keyword analysis and learn email marketing and ad designing.
Expected Job Role / career opportunities	• Digital Marketing Manager • Search Engine Optimizer • Social Media Marketer • Content Marketer • Content creator for AR-VR (Augmented Reality —Virtual Reality) • SEO Specialist for voice assistance
Credit Value	**4**

Part B- Content of the Course		
Total No. of Lectures + Practical (in hours per week): **L-1Hr / P-1 Lab Hr**		
Total No. of Lectures/ Practical: **L-30hrs/P-30hrs**		
Module	**Topics**	No of Hours
I	**Introduction to Digital Marketing:** Meaning of Digital Marketing, Differences from Traditional Marketing, Return of Investments on Digital Marketing vs. Traditional Marketing, E Commerce, Tools used for successful marketing, SWOT Analysis of Business for Digital Marketing, Meaning of Blogs, Websites, Portal and Their Differences, Visibility, Visitor Engagement, Conversion Process, Retention, Performance Evaluation. ***Keywords:*** *Titles, Meta Tags*	**10**
II	**Search Engine Optimization (SEO):** On page Optimization Techniques, Off Page Optimization Techniques, Preparing Reports, Creating Search Campaigns, Creating Display Campaigns. **Social Media Optimization (SMO):** Introduction to Social Media Marketing, Advanced Facebook Marketing, Word press Blog Creation, Twitter Marketing, LinkedIn Marketing, Instagram Marketing, social media Analytical Tools. ***Keywords:*** *Google, Word press, FB, Linkedln, Instagram, Analytics, SMO, Verbal Communication, Non- Verbal Communication, Infra personal and Interpersonal communication.*	**10**
III •	**Search Engine Marketing:** Meaning and Use of Search Engine Marketing, Tools used — Pay Per Click, Google Adwords, Display Advertising Techniques, Report Generation **Website Traffic Analysis, Affiliate Marketing and Ad Designing:** Google Analytics, Online Reputation Management, EMail Marketing, Affiliate Marketing, Understanding Ad Words Algorithm, Advertisement Designing. ***Keywords:*** *PPC, Google Ad words, Reports, SEM, Google Analytics, Ad Design, Social Media, Affiliate*	**10**

Practical	
• Design SE0 To improve page rank of our college. • Monitor traffic of your website using Google analytics. • Using search engine submission improves online recognition and visibility of websites. • Designing a blog. • Use of cross linking. • On /Off optimization of the website. • Design Back link and outbound link of website. • Web Development, Audio Video Production, • Digital Content Creation, Product & Sales review analysis	**30**

Text Books, Reference Books, Other resources

Suggested Readings:

1. Textbooks:

1. Ahuja Vandana Digital Marketing. Oxford University Press (2016) ISBN: 9780199455447,
2. SainyRomi, NargundkarRajendra Digital Marketing: Cases from India, Notion Press (2018) ISBN 9781644291931, 1644291932

2. Suggestive digital platforms web links:

https://www.wordstream.com/linkbuilding#:~text=bulding%201inks%20is%20one%20of.bui d%201inks%20to%20your%20site.
https://www.targetinternet.com/the-top-32-most-useful-digital-marketing-links/https://digitalmarketingphi lippines.com/8-strategic-steps-to-natural-link-building/tttps://vv˜ww. theweb-guys.co in/digital-marketing/

Suggested equivalent online courses:

https://onlinecourses.swayam2.acin

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B.Sc. I Year Computer Science
Subject: English Language and Indian Culture (Foundation)

PART A: Introduction				
Program: UG Level .	Class: I Year		Year: 2021-22	Session : 2021-22 onwards
Subject: **Foundation Course (English)**				
1.	Course Code	X 1-FCHB1T		
2.	Course Title	English Language and Indian Culture		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Foundation Course**		
4.	Pre-Requisite (if any)	To study this course, a student should have basic knowledge of English language. This course will be studied by all the students of UG level under the Foundation Course category.		
5.	Course Learning Outcomes (CLO)	Through this course the students will be able to: 1. Prepare for various competitive exams by developing their English language competence. 2. Promote their comprehension skills by being exposed to a variety of texts and their interpretations. 3. Build and enhance their vocabulary. 4. Develop their communication skills by strengthening grammar and usages. 5. Inculcate values which make them aware of national heritage and environmental issues, making them responsible citizens.		
6.	Credit Value	**2** Credit		
7.	Total Marks	Max. Marks: 50	Min. Pass Marks:17	

PART B : Content of the Course		
Total No. of Lectures-Tutorials- Practical (in hours per week): L-T-P		
Total No. of Lectures:		
Unit	Topics	No. of Lectures
I	**Reading, Writing and Interpretation Skills:** I. Where The Mind is Without Fear— Rabindranath Tagore [Key **Word: Patriotism]** 2. National Education — M. K. Gandhi **[Key Word: Edification]** 3. The Axe- R.K Narayan [Key **Word: Environment]** 4. The Wonder That Was India- A.L Basham (an excerpt) [Key **Word: Indianness]** 5. Preface to the Mahabharata C. Rajagopalachari [Key **Word: Indian Mythology]**	05
II	**Comprehension Skill:** Unseen Passage followed by Multiple choice questions	05

III_	Basic Language Skills 1: Vocabulary Building: Suffix, Prefix, Synonyms, Antonyms, Homophones, Homonyms and One-word substitution. 2: Basic Grammar: Noun, Pronoun, Adjective, Verb, Adverb, Prepositions, Articles,	05

Time and Tense

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Essential English Grammar - Raymond Murphy, Cambridge University Press.

- Practical English Grammar Exercises 1- A. J. Thomson & A. V. Martinet, Oxford India.
- Practical English Usage - Michael Swan, Oxford
- English Grammar in Use - Raymond Murphy, Cambridge University Press.

Part D: Assessment and Evaluation

Max Marks: 50	**Min Marks: 17**	**University Exam (UE)**	**Total: 50**

U.E. Time 2 Hours

	External Assessment (UE)	**Time: 2 Hours**	
	Fifty Multiple Choice /Objective/True-False type questions to be asked. Each question carries one mark		

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B.Sc. I Year Computer Science
Subject: Environmental Education (Foundation)

PART A: Introduction			
• Program: UG Level Certificate	Class UG 1 Year	Year: 'FIRST Year	Session: 2021.-22 onwards
Subject: Environmental Education .			
1.	Course Code	X 1 - F C A C 1 T	
2.	Course Title	**Environmental Education**	
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Foundation Course**	
4.	Pre-Requisite (if any)	A course intended to create awareness about the life of human beings which is an integral part of environment; and to inculcate the skills required to protect the environment from all s i d e s . To study this course, the student must have a knowledge about the environmental components, pollution, biodiversity, and ecosystem at senior secondary, class 12th level:	
5. . .	Course Learning Outcomes (CLO)	1. To understand various aspects of life form's, ecological processes, and the impacts on them by the human during Anthropocene era. 2. To build capabilities to identify relevant environmental issues, analyze the various underlying causes, evaluate the practices and policies, and develop framework to make inform decisions. 3. To develop empathy for all life forms, awareness, and responsibility toward environmental protection and nature preservation. 4. To develop the critical thinking for shaping strategies such as; scientific, social, economic, administrative & legal, environmental protection, conservation of biodiversity, environmental equity and sustainable development. 5. To prepare for the competitive exams.	

6.	Credit Value	**2** Credit	.
7.	Total Marks	Max.Marks : 50	Min. Passing Marks:17

PART B: Content of the Course		
. Total No. of Lectures-15 Hrs. (01 hours per week):		
Total No. of Lectures: 15		
Unit	Topics .	No. of Lectures
I	**Environment and Natural Resources:** • Multidisciplinary nature, Scope and Importance of Environment • Components of Environment: Atmosphere, Hydrosphere, Lithosphere, and Biosphere. • Brief account of Natural Resources and associated problems: Land Resource, Water Resource, Energy Resource • Concept of Sustainability and Sustainable Development ***Keywords: Environment, Forest, Mineral, Food, Land, Water, Energy, Sustainable Development***	5 Hrs.
II	**Biome, Ecosystem and Biodiversity:** • Major Biomes: Tropical, Temperate, Forest, Grassland, Desert, Tundra, Wetland, Estuarine and Marine • Ecosystem: Structure function and types their Preservation & Restoration . • Biodiversity and its conservation practices. ***Keywords: Biome, Ecosystem, Biodiversity***	4 Hrs.
III	**Environmental Pollution, Management and Social Issues:** • Pollution: Types, Control measures, Management and associated problems. • Environmental Law and Legislation: Protection and conservation Acts. • International Agreement & Programme. • Environmental Movements, communication and public awareness programme. • National and International organizations related to environment conservation and monitoring. • Role of information technology in environment and human health. ***Keywords: Pollution, Environmental Legislation, Environmental Movement, Environmental programme and organization.***	6 Hrs.

Suggested activities: (at least one)

1. Visit to an area to document environmental assets: rivers / forest / flora / fauna.
2. Visit to a local polluted site Urban / Rural/ Industrial / Agricultural
3. Study of simple ecosystem.

PART C: Learning Resources .

Textbooks, Reference Books, Other Resources

- Singh; J.S., Singh S.P. and Gupta, S.R.; "Ecology; Environment Science and Conservation ",S Chand publishing , New Delhi , (2018)
- Divan, S. and Rosencranz , A. , "Environmental Law and Policy in India :Cases, Material & Status" Oxford University Press , India , (2002) 2nd Edition .
- Odum , E.P. , "Fundamentals of Ecology " , Philadelphia Saundres , (1971)
- Bharucha , Erach , "Environmental studies " Universities Press India Pvt. Ltd. Hyderabad (2014) (Hindi Edition also available).
- Kaushik, Anubha , Kaushik , C.P. "Perspectives in Environmental Studies "New age International Publishers , (2018), 6th Edition .
- Asthana, D. K Asthana Meera, "A Textbook of Environmental Studies", S. Chand.Publishing, New Delhi (2007)
- National Digital Library (https://ndl.iitkgp.ac.in/homestudy/science)
- Epg- pathshala (https://epgp.inflibnet.ac.in/Home/Download)
- NPTEL (https://nptel.ac.in/course.html)
- Coursera (https://www.coursera.org/search?query=environmental+science&page=1)
- bjkd Hk#pk] i;kZoj.k v/;;u] vksfj;sUV CysdLoku] çkbosV fyfeVsM ubZ
- n;k'kdj f=ikBh] i;kZoj.k v/;;u eksrhyky cukjlhyky ifCy'klZ ubZ fnYyh(2005)
- jru tks'kh i;kZoj.k v/;;u] lkfgR; Hkou ifCyds'ku (2018)

Suggested equivalent online course —

i. The Health Effects of Climate Change (edx)
ii. Climate Change: Financial Risks and Opportunities (edx)
iii. Introduction to Environmental Law and Policy (coursera)
iv. Women in environmental biology (coursera)
v. Our Earth: It's Climate, History, and Processes (coursera)
vi. Ecology, physiology, environmental science (national digital library)

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B.Sc. I Year Computer Science
Subject: Yoga and Meditation (Foundation)

Part-A: Introduction			
Program: Certificate course	**Class: B.A. 1** Year	**Year: 2021**	**Session: 2021 — 2022**
Subject: Yogic Science			
I.	**Course Code**	**Al-YOSC1F**	
2.	**Course Title**	**Yoga and Meditation (Paper-2)**	
3.	**Course Type**	Foundation Course	
4.	**Pre-requisite (If any)**	**For BA I Year students, this** course is compulsory for all.	
5.	**Course Learning Outcomes**	**After studying this course, students will be able** to: **• Take care of their own Physical Mental emotional, social and spiritual health.**	
6:	**Credit Value**	**Theory-2**	
7.	**Total Marks**	**Max.** Marks: 50	Min. Passing Marks: **17**

Part-B: Content of the Course

Total numbers of Lectures (in hours per week): 2 hours per week
Total Lectures: 30 hours; L — T — P: 2 — 0 — 0

Units	Topics	No. of Lectures

I	**Introduction to Yoga and Yogic Practices** 1. Yoga: Etymology, definitions, aim, objectives and misconceptions 2. Yoga: Its Origin, history and development 3. Rules and regulations to be followed by Yoga Practitioners 4. Introduction to Yoga practices 5. Shatkarma: meaning, purpose and their significance in Yoga Sadhana 6. Introduction to Yogic Loosening practices and Surya Namaskar **Key Words:** History and Development of Yoga, Shatkarma, Common Yogic Practices.	**10**
II	**Breathing Practices and Pranayama** 1. Sectional Breathing (Abdominal, Thoracic and Clavicular)	**10**

	2.Yogic Deep Breathing 3.Concept of Puraka, Rechaka and Kumbhaka 4.Concept of Bandha and Mudra 5.AnulmoaViloma/NadiShodhana 6.Shitali7. Bhramari Key Words:Sectional breathing, Deep breathing, Bandha & Mudra, Shitali, Bhramari.	
III	**Practices leading to Meditation** 1.Recitation of Pranava Mantra 2. Recitation of Hymns, in vocations and prayers 3. Anter Maun 4. Breath Meditation 5. Om Dhyana Key Words: Pranav Mantra, Antermaun, Breath Meditation, Om Dhyan.	**10**

Part-C: Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Singh S. P & Yogi Mukesh: Foundation of Yoga, Standard Publication, New Delhi, 2010.
2. Swami Dhirendra Brahmchari: YogasanaVijnana, Dhirendra Yoga Publication, New Delhi, 1966.
3. Saraswati, Swami Satyanand: Asana, Pranayama, Mudra, Bandha (APMB), Yoga Publication Trust, Munger, 2013.
4. H. R. Nagendra: Asana, Pranayama, Mudra, Bandha, Swami Vivekananda YogPrakashan, Bangalore, 2002.
5. Ishwar Bhardwaj: SaralYogasana, Satyam Publishing House, New Delhi, 2018.
6. Shri Rai Singh Chouhan: Mudra Rahasya, Bhartiya Yog Sansthan, New Delhi, 2014.
7. Dr. Vishwanath Prasad Sanha: Dhyan Yoga, Bhartiya Yog Sansthan, New Delhi, 1987.
8. Shri Deshraj: Dhyan Sadhana, Bhartiya Yoga Sansthan, New Delhi, 2015.

Suggestive **digital platforms web links:**

1. www.rishikeshnathyogshala.com

Suggested **equivalent online courses:Liatps://sahaNdi.com/hathayoga-course**

2. https://theyogainstitute.org/

Part D: Assessment and Evaluation

Maximum Marks: 50 University Examination (Objective) 50 Time: **01.00 Hour**		
External Assessment: University Examination	Objective questions	50
	Total	**50**

Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
As recommended by Central Board of Studies of Computer Science and
Approved by H E the Governor of M. P. (As per NEP 2020)
Session 2021-22

B. Sc. I Year Computer Science

Subject: Hindi Language (Foundation)

(भाग ए) परिचय		
कार्यक्रम :यूजी लेबल प्रमाण–पत्र	कक्षा बी.ए. / बी.कॉम. / बी. एस.सी. / बी.एच.सी. / बी. सी.ए. / बी.बी.ए. (प्रथम वर्ष)	सत्र : 2021–22
विषय :–		आधार पाठ्यक्रम
कोर्स कोड –		XI-FCEAIT
कोर्स का शीषर्क कोर्स का प्रकार		भाषा और संस्कृति आधार पाठ्यक्रम
कोर्स अपेक्षित		कक्षा 12वीं उत्तीर्ण किसी भी विषय समूह से ।
कोर्स अधिगम उपलब्धि (लर्निंग आउटकम) (सीएलओ)	1. उत्कृष्ट साहित्यिक पाठो के अध्ययन से रूचि का विकास करना । 2. सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना । 3. भाषा–ज्ञान । 4. सामान्य शब्दावली और विशेष के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना 5. विशिष्ट शब्दावली (बीज शब्द / की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना 6. प्रतियोगी परीक्षाओं हेतु तैयार करना ।	
क्रेडिट मान	02 क्रेडिट	
कुल अंक	50 अंक	
उत्तीर्ण अंक	17 अंक	

भाग बी कोर्स सामग्री		
व्याख्यान की कुल संख्या : वर्ष में अधिकतम 15 घंटे		
यूनिट	**विषय**	**व्याख्यान की संख्या**
इकाई –एक	1. मैथिलीशरण गुप्त परिचय पाठ – मातृभूमि (कविता) 2. प्रेमचन्द्र परिचय पाठ – शतरंज के खिलाड़ी (कहानी) 3. व्यंग्यः शरद जोशी – जी पर सवार इल्लियॉ	**5 घंटे**
इकाई – दो	1. वैचारिक – भारतीय भाषाओं में राम 2. आचार्य रामचन्द्र शुक्ल परिचय– पाठ : उत्साह (भावमूलक निबंध) 3. रामधारी सिंह दिनकर परिचय – पाठ : भारत एक है (संस्कृति) 4. आदिशकराचार्य –जीवन व दर्शन	**5 घंटे**
इकाई–तीन	1. पर्यायवाची शब्द, विलोम शब्द, अनेक शब्द के लिए एक शब्द (हिन्दी व्याकरण) 2. संधि और उसके प्रकार (हिन्दी व्याकरण) 3. बीज शब्द – धर्म, अद्वैत, भाषा अवधारणा, उदारीकरण ।	**5 घंटे**
सर बिन्दु (की वर्ड)/टेग		
सर्च करेः		
मैथिलीशरण गप्त	मैथिलीशरण गुप्त परिचय पाठ – मातृभूमि (कविता)	
प्रेमचन्द्र	प्रेमचन्द्र परिचय पाठ – शतरंज के खिलाड़ी (कहानी)	
रामधारी सिंह दिनकर	भारत एक है रामधारी सिंह दिनकर	
आचार्य रामचन्द्र शुक्ल	उत्साह निबंध – आचार्य रामचन्द्र शुक्ल	
स्वामी विवेकानंद	शिकाओं व्याख्यान	
धर्म क्या है अद्वैत भाषा विकास भाषा परिभाषा अवधारणा का अर्थ एवं परिभाषा उदारीकरण की विशेषता पर्यायवाची शब्द विलोम शब्द अनेक शब्द के लिए एक शब्द – संधि		

(भाग सो) अनुशंसित अध्ययन संसाधन		
पाठ्य पुस्तकें, सन्दर्भ पुस्तकें, अन्य संसाधन		
1.	प्रेमचन्द्र – मानसरोवर खण्डः 3	
2.	टाचार्य रामचन्द्र शुक्ल – चिन्तामणि भाग–1	
3.	डॉ. वासुदेव नन्दन प्रसादः आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, ठाकुर बाड़ी, रोड़ पटना, बिहार	
4.	डॉ. राजेश्वर चतुर्वेदी हिन्दी व्याकरण–उपकार प्रकाशन आगरा उ.प्र.	
5.		
6.	हिन्दी ज्ञान कोश	
7.	इन्टर ने सामग्री – टैग में उल्लेखित	

(भाग डो)
निरंक

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Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
As recommended by Central Board of Studies of Computer Science and
Approved by H E the Governor of M. P. (As per NEP 2020)
Session 2022-23

B.Sc. II Year Computer Science
Subject: Computer Networks & Information Security (Major - I)

PART A : Introduction			
Program: Diploma	**Class:** B.Sc.	**Year:** Second	**Session:** 2022-2023
Subject: Computer Science			
1.	Course Code	**S2-COSC1T**	
2.	Course Title	**Computer** Networks **& Information** Security	
3.	Course Type (Core course/Elective/ Generic lective/Vocational)	Core Course -(Major — I)	
4.	Pre-Requisite (if any)	NIL	
5.	Course Leaming Outcomes (CLO)	**After completing this course student will be able to:** 1. Define and describe the components of Data Communications system such as Various protocols, OSI Model, Data transmission in analog and digital format. 2. Identify and differentiate among the network devices and drivers. 3. Learn and describe various error detection and correction methods. Define the various terminologies used in Network and Application layers. 4. Compare the various network technologies and can decide the suitable technology installation as per requirement and environment at any workplace. 5. Describe the various protocols and can identify the application areas of each protocol. 6. Know the fundamentals of network and information security issues, laws, and various security technologies which can be applied on work place.	
6.	Credit Value	Theory — 4 **Credits** **Practical** — 2 Credits	
7.	Total Marks	Max. Marks: 30+70	Min. Passing Marks: 33

PART B: Content of the Course		
No. of Lectures(in hours per week): **2 Hrs. per week**		
Total No. of Lectures (in hours): **60 Hrs.**		
Modules	**Topics**	**No. of Lectures**
I	**Introduction to Computer Network:** **Use of computer network:** Access to information, person to person communication, electronic commerce, internet of things; **Types of computer network:** Broadband access network, Mobile and wíreless network, content delivery network, transit network, Enterprise network. **Network Technology:** Personal Area Network, Local Area Network, Metropolitan Area Network, Wide Area Network, intem networks, example of network (Internet, Mobile network, wireless network-Wi-Fi); **Reference Model**: OSI, TCP/IP, Critique of the OSI and TCP/IP reference models; **Policy, Legal & Social Issues:** Online speech, net neutrality, security & privacy, disinformation. **Keywords:** IoT, Broadband, LAN, MAN, WAN, OSI, TCP/IP.	8
II	**Physical Layer:** **Guided Transmission Media:** Twisted pairs, coaxial cable, Fiber Optics; **Wireless Transmission:** The electromagnetic spectrum, frequency hopping spread spectrum, direct sequence, spread spectrum, ultra-wideband communication; Cellular Network : Common concepts-cells, handoff, paging; 1G, 2G, 3G, 4G & 5G technology. **Keywords :** Coaxial cable, fiber optics, 2G, 3G, 4G, 5G.	8
III	**Data Link Layer:** **Service Provided to Network Layer:** Data Link Control: Framing, Flow and Error Control; Error detecting codes; Error Correcting Codes; **Data Link Protocols:** Basic transmission and receipt, simplex link layer protocol, Full duplex, Sliding window protocol, Packet over SONET, ADSL, Point-to-Point Protocol. **Switching Techniques:** packet Switching, Circuit Switching, Datagram Networks, Virtual-Circuit Networks, and structure of a Switch. **Network Devices & Drivers:** Router, Modem, Repeater, Hub, Switch, Bridge and Gateways (fundamental concepts) **Keywords:** error gnectihg, codes, error detecting codes, SONET, ADSL, point -topoint protocol, Router, Modem, Repeater, Hub, Switch, Bridge, Gateways.	12
IV	**Network Layer :** Network layer Issues, Routing Algorithm : Optimality, principle of shortest path algorithm, Flooding, Distance Vector Routing , Broadcast Routing; congestion in network, traffic management approaches; IP Address, IPv4 Address, IPv6 Address, **Virtual Circuit Network:** Frame Relay and ATM, **Transport Layer:** Process-Process Delivery: UDP, TCP. **Application layers:** DNS, SMTP, POP, ftp, http and	12

	https. Basics of Wi-Fi (Fundamental concepts only). **Streaming audio and video:** digital audio and video, streaming stored media, real-time streaming. **Keywords:** routing algorithm, IPv4, IPv6, ATM, SMTP, POP, ftp, http, https, WiFi, video streaming.	
V	**Network Security and Information Security:** Fundamentals of network and information security: principles of security and attack. Security Goals (Confidentiality, Integrity, and Availability), Non-Repudiation. **Overview of Security Threats and Vulnerability:** Types of attacks on Confidentiality, Integrity and Availability. **Vulnerability and Threats:** Phishing Attacks, E-mail threats, Web-threats, Intruders and Hackers, Insider threats, SQL injection Attacks, Ransomware. Malware: Worms, Virus, Spams, Adware, Spyware, Trojans. **Security Technology:** Firewalls, Intrusion detection and prevention systems, Scanning and Analysis Tools: Biometric access controls, Cipher methods, Cryptographic algorithms, Cryptographic tools, Protocols for secure communication. **Keywords:** phishing, SQL injection, Worms, Computer virus, Spyware, Trojans, Firewall, Cipher, Cryptography.	10
VI	**Computer and Cyber-crimes:** Cyber-crimes and related concepts, distinction between cyber-crimes and conventional crimes, Cyber objectives. Kinds of cyber-crimes, cyber stalking, forgery ans fraud; crime related to IPRs, cyber terrorism, Ransom ware attacks, computer vandalism. **Cyber Laws-** Introduction to IT laws & Cyber Crimes:. Internet Haccking, Cracking, Viruses, Virus Attacks, Software Piracy Intellectual property, Legal System of Information Technology, Social Engineering, mail Bombs, Bug Exploits. Scope of cyber laws: e-commerce, online contracts, IPRs (copyright, trademarks and software patenting) e-taxation e-governance and cyber-crimes, Cyber law in Indian with special reference to Information Technology Act, 2000 and Recent amendments. **Keywords:** cyber-crime, cyber stalking, cyber-fraud, IPR, IT laws, e- commerce, e-taxation, e-governance mail bombs.	10

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

Textbooks:

- Andrew S. Tanenbaum, Nick Feamsteer, David J. Wetherall, Computer Networks, 6th Edition, (2021), Pearson
- Michael E Whitman and Herbert J Mattord, Principles of Information Security, Fourth Edition, CENGAGE Learning, 6th Indian Reprint.
- M. Merkow, J . Breithaupt, Information Security Principles and Practices, 2nd Edition, 2014, Pearson Education.
- G.R.F. Snyder, T Pardoe, Network Security, Cengage Learning.
- Praveen Kumar Shukla, Surya Prakash Tripathi, Ritendra Goel "Introduction to Information Security and Cyber Laws", 2014, Dreamtech Press.
- Faiyaz Ahamad, KLSI "Cyber Law and Information Security", 2013, Dreamtech Press.
- Books published by M.P. Hindi Granth Academy, Bhopal

Reference books:

- Kurose James F., Ross Keith W., Computer Networking, A Top-Down Approach, Sixth Edition, 2017, Pearon
- Micki Krause, Harold F. Tipton, Handbook of Information Security Management, Vol. 1-3, CRC Press LLC.
- B. A. Forouzan: Data Communications and Networking, Fourth edition, TMH Publishing. Company Ltd.
- Basta, W.Halton, Computer Security: Concepts, Issues and Implementation, Cengage Learning India.

Suggestive digital platform web links:

1. https://www.youtube.com/watch?v=qiOR5rTSshw
2. Free CCNA | Network Fundamentals - Day 1 (https://www.youtube.com/watch?v=n2D1o-aM-2s) Dlo- aM-2s)
3. Free CCNA | Network Deviceslittps://www.youtube.com/watch?v=H8W9oMNSuwo
4. Free CCNA | OSI Model & TCP/IP Suite (https://www.voutube.com/watch?v= - ai8JzhHu,,Y)
5. Free CCNA | Interfaces and Cables | Day3 (https://www.youtube.com/watcli?v=ieTH5lVhNaY)
6. Free CCNA | Intro to the CLI | Day 4 (httns://www.voutube.com/watch?v=IYbtai7Nu2g)
7. Free CCNA | Ethernet LAN Switching (Part 1) | Day 5 (https://www.voutube.com/watc1i?mm+n762WG0Vo)
8. e CCNA | Analyzing Ethernet Switching | Day 6 Lab (https://www.youtube.com/watch?v=Ig0dSaOQDI8)
9. Free CCNA | IPv4 Addressing (Part 1) | Day7 (https://www.youtube.com/watch?v=3RObsfEUuhs)
10. Free CCNA ! IPV6 Part 1 ! day 31 (https://www.youtube.com/watch?v=ZNuXyOXae5U)
11. Free CCNA | IPv6 Part 3 | Day 33 (https://www.youtubecom/watch?v=rwkHfsWQwy8
12. http://www.mphindigranthacademy.org/

Suggested equivalent online courses

NPTEL:

1. Demystifying Networking (04 weks)
2. Cyber Security (15 Weeks). -
3. https://www.edx.ore/1earifcoinputer-networking

Part D: Assessment and Evaluation		
Suggested Continuous Evaluation Methods: Maximum Marks : 100 Continuous Comprehensive Evaluation (CCE) : 30 marks University Exam (UE) : 70marks		
Internal Assessment: Continuous Comprehensive Evaluation (CCE) : 30	Class Test Assignment/presentation	Total 30
External Assessment : University Exam Section: 70 Time : 03.00 Hours	Section (A) : Objective Question Section (B) : Short Questions Section (C) : Long Questions	Total 70

Department of Higher Education, Government of Madhya Pradesh
Yearly Syllabus for Undergraduates
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Session 2022-23

B.Sc. II Year Computer Science
Subject: Computer Networks Lab (Major - I)

PART A : Introduction				
Program: Diploma		**Class:** B.Sc.	**Year:** Second	**Session:** 2022-2023
Subject : Computer Science				
1.	Course Code	S2-COSC1P		
2.	Course Title	Computer Networks **Lab**		
3.	Course Type (Core Course/ Elective/ Generic Elective/ Vocational	Core Course - (Major — I)		
4.	Pre-Requisite (if any)	Open for all		
5.	Course Learning Outcomes (CLO)	**After completing this lab course, student's will be able to:** 1. Learn and identify various cables used in the networking. 2. Learn; identify various connectors used to connect different cables. 3. Use the various tools for preparing the connectors for cable. 4. Configure and manage various local area networks at home and at work place.		
6.	Credit Value	**Practical** – 2 Credits		
7.	Total Marks	**Max. Marks :** 100	**Min. Passing Marks :** 33	

PART B : Content of the Course		
No. of Lab. Practical's (In hour per week): **1 Hr. per week**		
Total No. of Labs: **30 Hrs.**		
	Suggestive List of Practical's	**No. of Labs.**
	1 Study of UTP network cable o Study the color code of UTP cable o Categories of UTP n/w cable o Shielding of n/w cable o Electricity interference with n/w cable o Maximum length for which data cable can be used o Crimping of RJ45 connector and Punching of data n/w cable o Penta scanning of cabling work o Rules of UTP laying **2 Knowledge of Structured Cabling and its components** o Information outlet with box o Network rack (4U, 6U, 9U, 12U, 24U, 32U, 42U) o Patch Panel	30

	○ Rack Management **3 Study of Optical Fiber cable** ○ Different cores of OFC (6 core, 12, 24 core) ○ Multimode & Single mode OFC cable ○ Shielding of OFC ○ Splicing/Termination of OFC. ○ OTDR Testing ○ LIU fixing ○ LIU management (pigtail/fiber patchcord) ○ Media Convertor ○ SFP module ○ Rules of OFC laying **4 Use of tools** ○ Crimping Tool ○ Punching Tool ○ Nose plier ○ Wire Stripping and Cable Cutter ○ Multimeter ○ RJ45 RJ11 RJ12Cat5 Cat6 network cable tester ○ In-Line Coupler (RJ45 F/F) ○ RJ45 network Splitter Adapter 2-way **5 Configuration/Management of Local Area Network** ○ Implementation of file and printer sharing. ○ Installation of ftp server and client. ○ Connect the computer in local area network. ○ Configuring Class A IP Address on LAN Connection in Computer LAB and then use following tools: ping, ipconfig, getmac, hostname, nslookup, tracert, arp, pathping, systeminfo. ○ Configure static routing using packet tracer software ○ Configure Dynamic routing using packet tracer ○ Configure VLAN using Managed switch Device/Packet tracer ○ Implementation of Subnetting in Class A, B and C ○ Ping Between two system using IPv6 ○ Configuration of NAT for incoming packet request ○ Configuration of software/hardware firewall to block outgoing request to facebook.com	

PART C : Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings • Andrew S. Tanenbaum,Nick Feamster, David J. Wetherall, Computer Networks, 6th Edition, (2021), Pearson. • Michael E Whitman and Herbert I Mattord, Principles of Information Security, Fourth Edition, CENGAGE Learning, 6th Indian Reprint. • Books published by M.P. Hindi Granth Academy, Bhopal **Reference books:** • Hacking Exposed, Stuart McClure, Joel Scrambray, George Kurtz, TMH. • Computer Security Art and Science, Matt Bishop, Pearson/PHI.
Suggestive digital platform web links https://www.edx.or%lCdNfcomputei-networkinq• http://www.iiii»1iindiqoant1iacademv.ore/ **Suggested equivalent online courses** https://nptel.ac.in/courses/106/105/106105081/

Part D – Assessment and Evaluation			
Suggested continuous Evaluation Methods:			
Internal Assessment	**Marks**	**External Assessment**	**Marks**
Class Interaction /Quiz		Viva Voce on Practical	
Attendance		Practical Record File	
Assignments (Charts/model Seminar/ Ruler Service/Technology Dissemination/Report of Excursion/ Lab Visits/ Survey/ Industrial Visit)		Table work / Experiments	
TOTAL	**30**		**70**

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B.Sc. II Year Computer Science
Subject: Object Oriented Programming with Java (Major - II)

Part A : Introduction				
Program : **Diploma**		Class : **B.Sc**	Year : **II Year**	Session : **2022-23**
Subject : **Computer Science**				
1.	Course Code	**S2-COSC2T**		
2.	Course Title	**Object Oriented Programming** with **Java**		
3.	Course Type (Core Course/E1ective/Generi c Elective/ Vocational	**Core Course — (Major — II) / Minor / Elective**		
4.	Pre-Requisite (if any)	To study this course, a student must have successfully completed the course on Programming Methodology at Certificate Level.		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following :** 1. Implement object Oriented programming concept using basic syntaxes of control structures, strings and function for developing skills of logic building activity. 2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to a specific problem. 3. Demonstrates how to achieve reusability using inheritance, and packages and describes faster application development can be achieved. 4. Demonstrate understanding and use of different exception handling mechanisms and concepts of multi-threading for robust faster and efficient application development. 5. Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events. 6. Identify, Design & Develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture.		
6.	Credit Value	Theory - 4 **Credits** **Practical** — 2 **Credits**		
7.	Total Marks	Max. Marks : **30+70**		Min. Passing Marks: 33

PART B: Content of the Course		
No. of Lectures (in hours per week): **2 Hrs. per week**		
Total No. of Lectures : **60 Hrs.**		
Module	**Topics**	**No. of Lectures**
I	**OOPS** - Object Oriented Paradigm, Benefits of OOP, Applications of OOP. **Java** - History, Java Features, How Java Differs from C and C++, Java and internet, Java and World Wide Web, Web Browsers, Hardware and Software Requirements, Java Supports Systems, Java Environment. **Java Program Structure** - Java Tokens, Java Statements, Implementing a Java Program, Java Virtual Machine, Command Line Arguments, and Programming Style. **Keywords :** OOPS, JVC, WWW, Java Environment	**12**
II	**Java Basics** -Constants, Variables, Data Types, Declaration of Variables, Giving Values to Variables, Scope of Variable, Symbolic Constants, Type Casting, Getting Values of Variables; Standard Default Values. **Operators** - Arithmetic Operator, Relat i onal Operators, Logical Operators, Assignment Operators, Increment and Decrement Operators, Conditional Operators, Bitwise Operators, Special Operators. **Arithmetic Expressions** - Evaluation of Expressions, Precedence of Arithmetic Operators, Type/Conversions in Expressions, Operator Precedence and Associativity, Mathematical Functions. **Decision** Making with if Statement, Simple if Statement, if……Else Statement, Nesting of if ...else Statement, i f – e l s e - L a d d e r The Switch statement, The ? Operator. **Loops –** While Statement, do statement, for Statement, Jump in Loops, Labeled Loops. **Keywords :** Operators, Airthmetic Expressions, Decision Making, Loops.	**12**
III	**Class-** Defining a Class, Adding Variables, Adding methods, Creating Objects, Accessing Class Members, **Constructors –** Definition and Types, Methods Overloading, Static Members, Nesting of Methods. **Inheritance** - Extending a Class, Overloading Methods, Final Variables and Methods, Final Classes, Finalize Methods, Abstract Methods and Classes,. Visibility Control Arrays, One Dimensional Array, Strings, Vectors, Wrapper Classes. Defining Interfaces, Extending Interfaces, Implementing Interfaces, Accessing Interface Variables. **Keywords:** Class, Constructors, Inheritance, Final, Abstract Methods, Overloading	**12**

IV	**Java API Packages** - Using System Packages, Naming Conventions, Creating Packages, Accessing a Package, Using a Package, Adding a Class to a Package, and Hiding Classes. Creating Threads, Extending the Thread Class, Stopping and Blocking a Threads, Life Cycle of a Thread, Using Threads Methods, Threads Exceptions, Threads Priority, Synchronization, Implementing the 'Runnable' interface. **Types of Errors** - Exceptions, Syntax of Exception Handling Code, Multiple Catch Statements, Using Finally Statements, Throwing Our Own Exceptions, Using Exceptions for Debugging. **Preparing to Write Applets** - Building Applet Code, Apple Life Cycle, Creating an Executable Applet, Designing a Web Page, Applet Tag, Adding Applet to HTML File, Running the Applet. Keywords : API, threads, synchronization, errors, Applets, debugging	**12**
V	**More About the Applet tag –** Passing Parameters to Applets, Aligning the Display, More About HTML Tags, Displaying Numbering Values, Getting Input from the user. **The Graphics Class**- Lines and Rectangles, Circles and Ellipses, Drawing Arcs, Drawing Polygons, Line Graphs, Using Control Loops in Applets, Drawing Bar Charts. **Concept of Stream –** Stream Classes, Byte Stream Clases, Character Stream Classes, Using Streams **Other Useful I/O Classes –** Using the File Class Input/ Output Exceptions, creation of Files, Reading/ Writing Characters, Reading /Writing Bytes, Handing Primitive Data Types, Concatenating and Buffering Files, Random Access, Files, Interactive Input and Output, other Stream Classes. Keywords : Stream, Files, Graphics Class, Buffering, HTML Tags.	**12**

PART C : Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks -

- E Balguruswami, Programming with Java, Tata McGraw-Hill Publication.

Reference Books –

- Bruce Eckel, Thinking in Java.
- Herbert Schildt, Java: The Complete Reference .
- Y. Daniel Liang, Introduction to Java Programming .
- Paul Deitel, Harvey Deitel, Java: How To Program .
- Cay S. Horsttnann, Core Java Volume I —Fundamentals
- Java Projects, BPB Publication.
- Dr. S.S. Kandare, Programming in Java, S Chand Publications
- Books published by M.P. Hindi Granth Academy, Bhopal.

Suggestive digital platform web links:

- https://www.cs.cmu.edu/afs/cs.cmu.edu/user/gchen/www/download/java/learnJava.pdf
- https://www.tutorialspoint.com/java/java_tutorial.pdf
- https://www.youtube.com/watch?v=7s3xDfdqfDw
- https://www.mphindigranthacademy.org

Suggested equivalent online courses

- https://nptel.ac.in/courses/106/105/106105191/

PART D : Assessment and Evaluation

Suggested Continuous Evaluation Methods :

Maximum Marks : 100

Continuous Comprehensive Evaluation (CCE) : 30marks University Exam (UE) 70marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE):30	Class Test Assignment/Presentation	
External Assessment : University Exam Section: 70 Time : 03.00 Hours	**Section(A)** : Objective Questions **Section (B)** : Short Questions **Section (C)** : Long Questions	Total 70

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B.Sc. II Year Computer Science
Subject: Object Oriented Programming with Java Lab (Major - II)

Part A : Introduction				
Program : **Diploma**		Class : **B.Sc**	Year : **II Year**	Session : **2022-23**
Subject : **Computer Science**				
1.	Course Code	**S2-COSC2T**		
2.	Course Title	**Object Oriented Programming** with **Java**		
3.	Course Type (Core Course/E1ective/Generic Elective/ Vocational	**Core Course — (Major — II) / Minor / Elective**		
4.	Pre-Requisite (if any)	To study this course, a student must have successfully completed the course on Programming Methodology at Certificate Level.		
5.	Course Learning Outcomes(CLO)	**After the completion of this course, a successful student will be able to do the following :** 1. Implement object Oriented programming concept using basic syntaxes of control structures, strings and function for developing skills of logic building activity. 2. Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to a specific problem. 3. Demonstrates how to achieve reusability using inheritance, and packages and describes faster application development can be achieved. 4. Demonstrate understanding and use of different exception handling mechanisms and concepts of multi-threading for robust faster and efficient application development. 5. Identify and describe common abstract user interface components to design GUI in Java using Applet & AWT along with response to events. 6. Identify, Design & Develop complex Graphical user interfaces using principal Java Swing classes based on MVC architecture.		
6.	Credit Value	**Practical** — 2 **Credits**		
7.	Total Marks	Max. Marks : **100**		Min. Passing Marks: 33

PART B: Content of the Course		
No. of Lab Practical (in hours per week): 1 **Hrs. per week**		
Total No. of Lab : **30 Hrs.**		
Module	**Topics**	**No. of Labs.**
	Using any text editor: Notepad/ Eclips/ Netbeans/ Sublime etc.) 1. Find greater number between two numbers- using conditional operator. 2. Find the factorial of number if number is given by user using command line argument. 3. Write a program to check if a number is prime or not. 4. Write a program to display tables from 2 to 10. 5. Write a program to print Fibonacci series. 6. Enter a no. and check whether it is even or odd. 7. Write a Program to find sum & average of 10 no.using arrays. 8. Write a program to display reverse of a digit no. using array 9. Write a program to demonstrate function overloading. 10. Write a program to display grade according to the marks obtained by the students. 11. Write a program to calculate the salary of an employee if salary is greater than or equal to 20000 and year of services is greater than or equal to 5 years then bonus will be 2000 otherwise 1000 and print grass salary of employee. 12. Write a program to	

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B.Sc. II Year Computer Science

Subject: Mathematics : Advanced Calculus and Partial Differential Equations (Minor)

Part A Introduction				
Program: Diploma Course		Class: B.A./B.Sc. II Year	Year: 2022	Session: 2022-23
Subject: Mathematics				
1	**Course Code**	S2-MATH2T		
2	**Course Title**	Advanced Calculus and Partial Differential Equations		
3	**Course Type**	Major — 2/Minor/Elective		
4	**Pre-requisite (if any)**	To study this course, a student must have had the subject Mathematics in Certificate Course or equivalent.		
5	**Course** Learning Outcomes (CLO)	The course will enable the students to: 1. Understand many properties of the real line R and sequences. 2. Calculate the limit superior, the limit inferior, and the limit of a bounded sequence. 3. Apply the mean value theorems and Taylor's theorem. 4. Apply the various tests to determine convergence and absolute convergence of an infinite series of real numbers. 5. Formulate, classify and transform partial differential equations into canonical form.		
6	**Credit Value**	**Theory: 6**		
7	**Total Marks**	**Max. Marks: 30 + 70** **I Min. Passing Marks: 10 + 23**		

Part B - Content of the Course		
Total No. of Lectures (in hours per week): 3 hours per week **Total Lectures: 90** hours		
Unit	**Topics**	**No. of Lectures**
I	1.1 Historical background: 1.1.1 A brief historical background of Calculus and partial differential equations in the context of India and Indian heritage and culture 1.1.2 A brief biography of Bodhayana 1.2 Field structure and ordered structure of R, intervals, bounded and unbounded sets, supremum and infimum, completeness in R, absolute value of a real number. 1.3 Sequence of real numbers 1.4 Limit of a sequence 1.5 Bounded and monotonic sequences 1.6 Cauchy's general principle of convergence 1.7 Algebra of sequence and some important theorems	18
II	2.1 Series of non-negative terms 2.2 Convergence of positive term series 2.3 Alternating series and Leibnitz's test 2.4 Absolute and Conditional Convergence of Series of real terms 2.5 Uniform continuity 2.6 Chain rule of differentiability 2.7 Mean value theorems and their geometrical interpretations	18
III	3.1 Limit and continuity of functions of two variables 3.2 Change of variables 3.3 Euler's theorem on homogeneous functions 3.4 Taylor's theorem for functions of two variables 3.5 Jacobians 3.6 Maxima and Minima of functions of two variables 3.7 Lagrange's multiplier method 3.8 Beta and Gamma Functions	18
IV	4.1 Partial differential equations of the first order 4.2 Lagrange's solution 4.3 Some special types of equations which can be solved easily by methods other than the general method 4.4 Charpit's general method 4.5 Partial differential equations of second and higher orders	18
V	5.1 Classification of partial differential equations of second order 5.2 Homogeneous and non-homogeneous partial differential equations of constant coefficients 5.3 Partial differential equations reducible to equations with constant coefficients	18
Keywords/Tags: Bodhayana, Sequence, Series, Jacobians, Maxima and Minima, Beta and Gamma Functions, Partial differential equations.		

Part C - Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

Text Books:

1. Devi Prasad: Advanced Calculus, Prentice Hall India Learning Private Limited, 2009.
2. S C Malik and Savita Arora: Mathematical Analysis, New Age International Private Limited, 1st edition, 2017.
3. M. D. Raysinghania: Ordinary and Partial Differential Equations, S. Chand & Company, New Delhi, 2017.
4. Gerard G. Emch, R. Sridharan and M. D. Srinivas: Contributions to the History of Indian Mathematics. Hindustan Book Agency, Vol. 3, 2005.
5. rar VkRT W li-E1 BichN^{4}41 t-r

Reference Books:

1. R. R. Goldbeg: Methods of Real Analysis, Oxford & I.B.H. Publishing co. New Delhi, 2020.
2. T. M. Apostol: Mathematical Analysis, Narosa Publishing House. New Delhi. 1985.
3. D. Soma Sundaram and B. Choudhary: A first Course in mathematical Analysis, Narosa Publishing, House, New Delhi, 1997.
4. Murray R. Spiegel: Theory and problems of advance Calculus, Schauma Publishing Co. New York, 1974.
5. Donald R. Sherbert, Robert G. Bartle: Introduction to Real Analysis, Wiley, 4th edition, 2011.
6. Shah Nita H.: Ordinary and Partial Differential Equations: Theory and Applications, PHI Learning Private Limited, Second edition, 2015.
7. Gorakh Prasad: Integral Calculus, Pothishala Pvt. Ltd. Allahabad, 2015.
8. K. Sankara Rao: Introduction to Partial Differential Equations, PHI, 3rd edition, 2010.
9. Bibhutibhusan Datta and Avadhesh Narayan Singh: History of Hindu Mathematics, Asia Publishing House, 1962.

Suggested Digital Platforms Web links:

https://epgp.inflibnet.ac.in
https://www.highereducation.mp.gov.in/?page=xhzIQmpZwkylQo2b%2Fy5G7w%3D%3D http://www.bhojvirtualuniversity.com

Suggested Equivalent online courses:

https://nptel.acin/courses/111/104/111104125/
https://nptel.acin/courses/111/101/111101153/

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): 70 Marks	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Total Marks: 30**
External Assessment: University Exam (UE)	**Total Marks: 70**

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B.Sc. II Year Computer Science

Subject: Physics : Electricity Magnetism and Electromagnetic theory (Elective)

Part A - Introduction			
Program: Diploma	**Class: B.Sc.**	**Year: Second**	**Session: 2022-2023**
Subject: Physics			
1.	**Course Code**	**S2-PHYS2T**	
2.	**Course Title**	**Electricity Magnetism and Electromagnetic theory (Paper 2)**	
3.	**Course Type (Major/ Minor/Elective/Generic Elective/Vocational/...)**	Major - 2, Minor and Elective	
4.	**Pre- requisite (If any)**	**To** study this course, the student must have passed B.Sc, first year with Physics.	
5.	**Course Learning Outcomes (CLO)**	After the completion of the course, the student should be able to 1. Understand the basic concepts of electricity and magnetism and their applications. 2. Apply various network theorems and their applications in electronics, electrical circuit analysis, and electrical machines. 3. Understand the construction and working of ballistic galvanometer and cathode ray oscilloscope. 4. Understand the concept of electromagnetic waves and their reflection and refraction from a plane surface.	
6.	**Credit Value**	**4**	
7.	**Total Marks**	**Max. Marks**: 30+70	**Min. Passing Marks**: 33

Part B - Content of the Course		
Total number of Lectures (in hours): 60		
Unit	**Topics**	**Number of Lectures**
I	**Electrostatics** 1. An overview of thermal and hydroelectric power plants in Madhya Pradesh. 2. Electrostatic field; Electric flux; Gauss's theorem of electrostatics; Applications of Gauss theorem: Electric field due to infinite long charged wire; Uniformly charged spherical shell and solid sphere; Charged plate; Conservative nature of electrostatic field; Laplace and poisons equations; Uniqueness theorem. 3. Dielectrics; Polar and non-polar molecules; Parallel plate capacitor with a dielectric; Electrical susceptibility and dielectric constant; Polarization and Polarization vector (P); Displacement vector (D); Intensity of Electric field (E); Relationship between D, E and P. 4. Gauss's law in dielectrics; Clausius-Mossotti relation, Langevin-Debye formula; Ferroelectric and Paraelectric materials; Hysteresis loop for ferroelectrics. **Keywords/Tags:.** Hydroelectric power plant, Electrostatic field, Dielectrics, Polarization vector, Displacement vector.	**12**
II	**Magnetostatics** 1. Lorentz force equation and magnetic field B; Bio-Savart's law; Calculation of magnetic intensity H for solenoid and anchor ring. 2. Ampere's circuital law and its applications for solenoid and Toroid; Basic law of magnetostatics indifferential form **V.B=O, VX.B=110,1;** Free and bound currents; agnetization and magnetization vector **M;** Magnetic permeability and susceptibility; Derivation of VXM=Jb for a non-uniformly magnetized substance; Relationship between **B, H** and **M.** 3. Diamagnetic, Paramagnetic and Ferromagnetic substances; B-H Curve and Hysteresis loss. 4. General idea about AC and DC motors, Motor winding. **Keywords/Tags:** Magnetic field, Magnetization, Hysteresis loss, Motor winding.	**12**
III	**Current electricity** 1. Network theorems: Concept of ideal current and voltage sources; Thevenin's theorem; Norton's theorem; Millman's theorem; Maximum power transfer theorem. 2. Transient current: Growth and decay of current in LR circuit; Charging and discharging of a capacitor through resistor; Measurement of high resistance by leakage; Charging and discharging of a condenser through an inductance and resistance. 3. Alternating currents: Complex number and their	**12**

	applications in alternating current circuits (RL, RC and LC); Series LCR (acceptor) and parallel LCR (rejector) circuits; Power factor. 4. A.C. bridges: Maxwell's bridge; Owen's brid Anderson's bridge; Kelvin's bridge. **Keywords/Tags:** Network theorems, Transient current, A.C. bridges.	
IV	**Motion of charged particles in electric and magnetic field** **1.** Motion of charged particles in electric and magnetic field: Construction and working principle of Cyclotron and Betatron; Thomson's method for the determination of specific charge (e/m) of electron. **2.** Ballistic galvanometer: Torque on a current loop; Current and charge sensitivity; Electromagnetic damping; Logarithmic damping; CDR. **3.** Introduction to CRO:Block Diagram of CRO; applications of CRO: (1) Study of Waveform, (2) Measurement of Voltage, Current, Frequency, and Phase Difference. **4.** Electromagnetic induction: Faraday's law; Lenz's law; Self . and mutual inductance; Reciprocity theorem; Self-mutual of coil; Mutual inductance of two coils; Energy stored in magnetic field. **Keywords/Tags:** Motion of charged particles, specific charge, Ballistic galvanometer, CRO, Electromagnetic induction.	**12**
V	**Electrodynamics** **1.** Equation of Continuity for current; Maxwell's displacement current; Derivation of Maxwell's equations; Poynting theorem. **2.** Electromagnetic wave equations; Plane electromagnetic wave in vacuum and dielectric media; Reflection and refraction at a plane boundary of dielectric; Polarization by reflection and Fresnel's equation; Brewster's Law. **3.** Electromagnetic Waves in conducting medium; Reflection and refraction of Electromagnetic wave by the ionosphere; Secant law; Skip distance and maximum usable frequency. **Keywords/Tags:** Displacement current, Poynting vector, Electromagnetic wave, Polarization by reflection.	**12**

Part C-Learning Resources Text Books, Reference Books, Other resources
Suggested Readings: 1. Mahajan S. and Choudhury, "Electricity, Magnetism & Electromagnetic Theory",2012, Tata McGraw. 2. Griffiths D.J., "Electricity and Magnetism", 3rd Edn., 1998, Benjamin Cummings. 3. Tayal D. C., "Electricity and magnetism", Himalaya Publishing Co. 4. Murugesan, "Electricity and magnetism", S. Chand & Co. 5. Feynman R. P., Leighton R.B., Sands M., "Feynman Lectures Vol.2", 2008, Pearson Education 6. Kshetrimayun R. S., "Electromagnetic field theory", 2012, Cengage Learning. **Suggested equivalent online courses:** 1. https://youtu.beiNED2C18u9Q0 Electromagnetic Theory by Prof D.K. Ghosh, Department of Physics, IIT Bombay

Part D-Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks : 100 Continuous Comprehensive Evaluation (CCE) Marks : 30 University Exam (UE) Marks: 70	
Internal Assessment : Continuous Comprehensive Evaluation (CCE):	Total Marks: 30
Internal Assessment : University Exam Section:	Total Marks: 70
Any remarks/ suggestions:	

Part A - Introduction			
Program: Diploma	**Class:** B.Sc.	**Year:** Second	**Session:** 2022-2023
Subject: Physics			
1.	**Course Code**	**S2-PHYS2P**	
2.	**Course Title**	**Electricity Magnetism and EMT Lab (Paler 2)**	
3.	**Course Type (Major/ Minor/Elective/Generic Elective/Vocational/...)**	Major- 2, Minor and Elective	
4.	**Pre- requisite (If any)**	To study this course, the student must have passed B.Sc. first year with Physics.	
5.	**Course Learning Outcomes (CLO)**		
6.	**Credit Value**	**2**	
7.	**Total Marks**	Max. Marks:100	Min. Passing Marks: 33

Part B - Content of the Course		
Total numbers of Practical (in hours): 60		
Sr. No.	**List of experiments**	**Number of Practical (in hours)**
1.	To draw the B-H curve and determination of Hysteresis loss.	**60**
2.	Determination of voltage, frequency and phase difference using CRO.	
3.	Study of sensitivity of CRO.	
4.	Verification of the Thevenin's theorem.	
5.	Verification of the Norton' s Theorem.	
6.	Verification of the maximum power transfer theorem.	
7.	Verification of the superposition theorem.	
8.	Measurement of self-inductance using Maxwell's bridge.	
9.	Measurement of unknown inductance using Kelvin's bridge.	
10.	Determination of self-inductance by Anderson's bridge.	
11.	To study of the charging and discharging of a condenser through a resistor.	
12.	Determination of impedance and power factor using LCR circuit.	
13.	Study of frequency response curve of a series LCR circuit and determination of resonant frequency, Quality factor and Band width.	
14.	To study of frequency response curve of a parallel LCR circuit and determination of anti-resonant frequency and Quality factor.	
15.	Determination of Dielectric constant of Kerosene by resonance method.	
16.	Determination of Self Inductance of a Coil by Rayleigh's Method using Ballistic Galvanometer.	
17.	Verification of Millman's theorem	
18.	To study the magnetic field along the axis of a circular coil.	
19.	Determination of M and H using Vibrational magnetometer and deflection magnetometer.	
20.	Comparison of capacity of two capacitors using Ballistic Galvanometer.	

Part C-Learning Resources
Text Books, Reference Books, Other resources

Suggested Readings:

1. Prakash I. & Ramakrishna, "A Text Book of Practical Physics", Kitab Mahal, 2011,11/e.
2. Squires G. L., "Practical Physics", Cambridge University Press, 2015, 4/e.
3. Flint B. L. and Worsnop H. T., "Advanced Practical Physics for students", Asia Publishing House, 197.
4. Chattopadhyay D. & Rakshit P. C., "An Advanced Course in Practical Physics", New Central Book Agency.
5. Chattopadhyay D., Rakshit P.C. and Saha B., "An Advanced Course in Practical Physics", New Central Book Agency P. Ltd.
6. Singh S.P., "Advanced Practical Physics", Pragati Prakashan.
7. Tayal D. C., "University Practical Physics", Himalaya Publishing House
8. Kumar P. R. Sasi, " Practical Physics", PHI Publication.
9. Srivastava Anchal, Shukla R. K., " Practical Physics", New Age International Publishers.
10. Agarwal D. C., "Experimental electronics", Technical Publishing House.
11. Srivastava J. P., " Elements of Solid state Physics", PHI Publication.

Suggestive digital platforms web links

1. https: ' w ww. vlab. co. i n 1)road-area-physi cal-seieness , Virtual Labs (Physical Sciences), **Ministry of Education**
2. https://stpis.comiLmicimecoursesioni ine.html , SWAYAM Online Courses

Part D-Assessment and Evaluation	
Suggested Continuous Evaluation Methods:	
Internal Assessment :	30
External Assessment :	70

The above marks distribution is given as per the ordinance 14B.

Maximum Marks : 100

Any remarks/ suggestions:

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B.Sc. II Year Computer Science
Subject: English (Foundation)

FC-II ENGLISH **PART A: Introduction**			
Program: UG Level	**Class: II Year**	**Year: 2022-23**	**Session:2022-23 onwards**
Subject. Foundation Course (English)			
I	Course Code	X2-FCHB I T	
2	Course Title	English Language and Foundation	
3	Course Type (Core Course/Elective/ Generic Elective/ Vocational	Foundation Course	
4	Pre-Requisite (if any)	To study this course, a student should have the basic knowledge of the English language. This course is designed for all the students of UG Second Year under the Foundation Course category.	
5	Course Learning Outcomes (CLO)	Through this course the students will be able to: I. Strengthen their grammar and vocabulary **2.** Acquire and develop LSRW (Listening, Speaking, Reading and Writing) skills **3.** Learn to think creatively and critically After the completion of the course, students are expected to gain competency and proficiency in English language to perform at professional and personal level as well as to face competitive examinations at State and National level.	
6	Credit Value	2 Credits	
7	**Total Marks**	**Min. Marks:50**	**Min. Marks: 17**

PART B: Content of the Course		
Total No. of Lectures: 15 hours		
Unit	**Topics**	**Number of Lectures**
I	**Text Interpretation Skills:** **1.** Daffodils — Wordsworth **2.** Bangle Sellers — Sarojini Naidu **3.** Patriotism Beyond Politics and Religion — A.P.J. Kalam **4.** Letter to God — G.L. Swanteh (Translated by Donald Yates) **5.** God Sees the Truth but Waits — Leo Tolstoy	10
II	**Comprehension Skills:** **Multiple** choice questions based on unseen passages	3
III	**Language Skills:** **Use of idioms, phrases and punctuations, Mis-Spelt & Inappropriate Words and Cloze Test, Conjunctions, re-organizing jumbled sentences, Spotting the errors.**	7
IV	**Writing Skills:** Advertisement and Notice-writing, Letter Writing (Formal &	5
V	**Speech Skills:** Vowel and consonant sounds, phonetic symbols Accent, Modulation and intonation	5
	Key Words: Daffodils, Wordsworth, Wandered, Bangles, Shining, Bridal,Politics, Religion, Patriotism,God, Letter, Lencho, Swanteh, Truth, Waits, Tolstoy	

PART C: Learning Resources
Textbooks, Reference Books, Other Resources
Suggested Readings and web materials: 1. Oxford English Language Reference. Compact Oxford Dictionary, Thesaurus and Word Power Guide. OUP. 2. Brush Up Your English by S T Imam. BharatiBhawan Publishers & Distributors, 2017 3. N. D. Turton and J.B. Heaton. Dictionary of Common Errors. Longman Ltd. 1998 4. SuzanaRoopa. A Practical Course in English Pronunciation. McGraw Hill Education India 5. Chris Lele.The Vocabulary Builder Workbook. Zephyros Press 6. S. P. Dhanvel. English and Soft Skills. Orient Black Swan, 2010. 7. Dr M. Farook. English for Communication, Emerald Publishers, 2015. 8. Dr Mathew Joseph. Fine-tune your English. Orient Black Swan, 2010. 9. E. Suresh Kumar, B Yadava Raju and C Muralikrishna. Skills in English. Orient Black Swan, 2013. 10. Bill Bryson. The Mother Tongue: English and How it Got it that Way. Harper Collins, **1990.**
Web Sources: www.englishclub.com https://nptel.ac.in http://www.bbc.co.uk/learningenglish https://www.eslfast.com https://www.myenglishpages.com

Part D: Assessment and Evaluation (Theory)			
Max Marks: 50	**Min. Marks: 17**	**University Exam (UE)**	**Total: 50**
University Exam (U.E.). Time 2 .00 Hours			
External Assessment (UE)		**Time: 2 Hours**	
50 multiple choice / objective / true — false type questions to be asked. Each question carries 1 mark			

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B.Sc. II Year Computer Science
Subject: Entrepreneurship Development (Foundation)

Program: Diploma		**Class: B. Sc. II Year**	**Year: II**	**Sessions: 2022-2023**
Subject: Entrepreneurship Development				
1.	**Course code**			
2.	**Course Title**			**Entrepreneurship Development**
3.	**Course Type (Core/Electric/Generic/Elective Vocational...)**			**Foundation**
4.	**Pre-requisite (if any)**			--
5.	**Course learning outcomes (CLO)**			This course introduces the students to the basics of entrepreneurship and small business management. Students gain an understanding of how to establish and manage a small business.
6.	**Credit Value**			
7.	**Total Marks**	**Max Marks: 50**		**Min Marks: 17**

Part B: Content of the course
Total Lectures:3^{o} Hours
Topics
1. Introduction: **Entrepreneurship Development** –Concept, types and Importance of entrepreneurs and significance of entrepreneurship in economic development, Startup process • Need, Problems, Challenges and solutions- women entrepreneurship and rural entrepreneurship **Report preparation:** Profiling of entrepreneurs after visiting Small Scale Entrepreneurs
2. Sources of Business Ideas And Tests of Feasibility: • Generation of startup ideas, Innovation vs Creativity • Significance of writing the business plan/ project proposal; Contents of business plan/ project proposal DPR (Detail Project Report) • Project submission/ presentation and appraisal thereof by external agencies, such as financial /non-financial institutions.
3. Regulatory Institutions and Schemes: **Role of Regulatory Institutions:** • Micro, Small & Medium Enterprise • District Industries Centers • Khadi and Village Industries Commission • National Small Industries Corporation • Small Industries Development. Bank of India • Commercial banks and various Self Employment Oriented grant and schemes; The concept, role and functions of self-help groups, business incubators, angel investors, venture capital and private equity fund in startup ideas.
Key Words: Entrepreneurship, Entrepreneurship Development, Startup, Women Entrepreneurship, Business Plan, Detail Project Report.

Part C: Learning resources

Text books, reference books and other resources

Suggested Readings:

1. Kuratko and Rao, Entrepreneurship: A South Asian Perspective, Cengage Learning.
2. Robert Hisrich, Michael Peters, Dean Shepherd, Entrepreneurship, McGraw-Hill Education
3. Desai, Vasant. Dynamics of Entrepreneurial Development andManagement. Mumbai, Himalaya Publishing House.
4. Dollinger, Mare J. Entrepreneurship: Strategies and Resources. Illinois, Irwin.
5. Holt, David H. Entrepreneurship: New Venture Creation. Prentice-Hall of India, New Delhi.
6. Plsek, Paul E. Creativity, Innovation and Quality. (Eastern Economic Edition), New Delhi: Prentice-Hall of India. ISBN-81-203-1690-8.
7. Singh, Nagendra P. Emerging Trends in Entrepreneurship Development. New Delhi: ASEED.
8. SS Khanka, Entrepreneurial Development, S. Chand & Co, Delhi.
9. K Ramachandran, Entrepreneurship Development, McGraw-Hill Education

Online or web resources:

https://www.kviconline.gov.inl
https://msme.gov.in/
http://www.slbemadhyapradesh.in/frontm.arquee/571e2722-f3ec-4b82-8591-5b4721dff44e-AtmaNirbhar%20Bharat%20Full%20Presentation_compressed.pdf •
T, Rama Devi (2017) retrieved from https://www.worldwidejournals.com/global-journal-for-research-analysis-GJRA/special_issuesJdf/September_2017_150711572562.pdf

Part D: Assessment / Evolution

Maximum marks : 50
University Exam : 50

Part A Introduction				
Program: Diploma Course		Class: B.A. II Year	Year: 2022	Session:2022-2023
Subject: Women Empowerment				
1	Course Code	X2-FCAD1T		
2	Course Title	Women Empowerment		
3	Course Type (Core Course/Elective/ Generic Elective/Vocational/ ....)	Foundation Course, Second Paper		
4	Pre-requisite (if any)	This is Compulsory Question paper of the foundation course for all the students of the second year of Graduation.		
5	Course Learning outcomes (CLO)	After going through this course, students will be able to understand the following: 1. Understand the history, concept and various dimensions of women empowerment in India. 2. Will be able to understand the constitutional provisions, laws and policies related to women empowerment. 3. Get knowledge of various issues, challenges and agencies supporting women empowerment.With this, you will be able to get acquainted with the glory story of the powerful women leadership of India. 4. Present study related to women empowerment will provide employment opportunities to the students in government, private and non- government organizations.		
6	Credit Value	Theoretical -2		
7	Total Marks	Max. Marks: 50	Min. Passing Marks: 17	

Part B - Content of the Course
Total No. of Lectures-Tutorials: 30 Hourse (per week Two hours): 6 hours per week L-T-P: 2-0-0

UNIT	SUBJECT	NUMBER OF LECTURES
I	1. History of Women Empowerment in India: Ancient Period, Medieval and Modern Period. 2. Concept of Women Empowerment:	06

17.4.23

	Meaning, forms, Need and Importance. 3. Dimensions of Women Empowerment: Social, Religious, Economic, Educational and Political. Key Words: Women Empowerment, Social, Religious, Economic, Educational and Political Dimensions.	
II	1. Women Empowerment: Constitutional Provisions and Laws 2. Women Empowerment Policy and Schemes A. Central Level B. State Level (With Special Reference to Madhya Pradesh) Key Words: Constitutional Provisions, Policy, Central Schemes, State Schemes.	06
III	1. Women Empowerment: Issues and Challenges. 2. Supporting Agencies: NGOs, Self Help Groups and Panchayati Raj Institutions. 3. Powerful Women Leadership of India: Ahilya Bai Holkar, Rani Durgavati, Savitri Bai Phule, Mary Kom, Sindhutai Sakpal, Tessy Thomas, Indira Nooyi, Gaura Devi. Key Words: NGOs, Self Help Groups, Panchayati Raj, Women Leadership.	08
IV	Financial Awareness Among Women: 1. Budget: Determination of objectives, establishment of goals, action plan for achieving goals. Formulation of family budget. A realistic budget: The rule (50 percent needs, 30 percent wants, 20 percent savings). 2. Identification of expenditure on self, identification of unnecessary expenditure, method of control over expenditure. 3. Indebtedness and savings priorities Debt-Circle Trap (Moneylender / Mahajan / Private Institutional Loan/Mortgage) Possible reasons and solutions for Debt Emergency Savings Wise Investment - Sukanya Yojana, Mahila Samman Savings Certificate (Effective from 01 April 2023) Action plan to achieve "Earn, Save and Spend" Key Words: Expenditure, Realistic Budget, Indebtedness, Wise Investment	10

Part C- Recommended Study Resources

Recommended Book/ Accessories Books / Other Text Resources

1. अंसारी, एम. ए., नारी तुम क्या ?, ज्योति प्रकाशन जयपुर, 2006

2. अंजली, भारत में महिला अपराध, राधा पब्लिकेशन नई दिल्ली, 2005
3. गोयल, संगीता और गोयल, सुनीता, भारतीय समाज में नारी, आर. जी.एस.ए. पब्लिशर्स जयपुर, 2003
4. कौर हरप्रीत, महिलाओं के विरुद्ध हिंसा एवं मद्यपान, अमेजिंग पब्लिकेशन नई दिल्ली 2014
5. कश्यप, आलोक, भारतीय समाज में नारी दशा और दिशा, आर्य पब्लिकेशन नई दिल्ली, 2013
6. नईम मुहम्मद, महिला सशक्तिकरण: चुनौतियां एवं समाधान, यूनिवर्सिटी पब्लिकेशन दिल्ली, 2014
7. सिंह, निशांत, भारतीय महिलाएं एक सामाजिक अध्ययन, ओमेगा पब्लिकेशन, नई दिल्ली 2012
8. सोती, वीरेंद्र, चंद्र, भारतीय संस्कृति में स्त्रियों की स्थिति, डी. के. प्रिंटवर्ल्ड लि. नई दिल्ली, 2009
9. शाह, तृप्ति, (हिंदी) अन, सोनी, रामनरेश, स्त्री जीवन का संघर्ष: प्राचीन काल से भक्ति आंदोलन तक उन्नति विकास शिक्षण संगठन एवं सहियर (स्त्री संगठन)
10. Samiuddin, Abida, and Khanam, R., Women Socio-Economic Empowerment, Globa Vision Publishing House, Ansari Road New Delhi, 2013
11. Tripathi, Madhusoodan, Women Rights in India, Omega Publications, Ansari Road New Delhi, 2011
12. वर्मा, सांवलिया बिहार, महिला जाग्रति और सशक्तिकरण, अविष्कार पब्लिकशर्स, जयपुर 2005
13. वर्मा, सांवलिया बिहारी, ग्रामीण महिला उत्थान, यूनिवर्सिटी पब्लिकेशन दिल्ली, 2011
14. यादव, वीरेंद्र, सिंह, नई सहस्राब्दी का महिला सशक्तिकरण : अवधारणा, चिंतन एवं सरोकार ओमेगा पब्लिकेशन, अंसारी रोड नई दिल्ल, 2010

Recommended Equivalent online course :
https//nptel.ac.in.
https//swayam.gov.in/explorer
IGNOU & Other centrally/state operated Universities MOOC platforms such as "SWAYAM" in Indiaand Abroad

Part D- Recommended Assessment methods

Recommended Assessment methods
Maximum Marks :50
UNIVERSITY EXAMINATION (OBJECTIVE) MARKS : 50

Assessment : University Exams: Time : 01 Hours	Total objective type Question : 50	**50x1 = 50** **Total Marks :50**
Any Comments / Suggestions :		

भाग अ परिचय				
कार्यक्रम: डिप्लोमा पाठ्यक्रम		कक्षा: बी.ए. द्वितीय वर्ष	वर्ष: 2022	सत्र : 2022-23
विषय: महिला सशक्तिकरण				
1	पाठ्यक्रम का कोड	X2-FCAD1T		
2	पाठ्यक्रम का शीर्षक	महिला सशक्तिकरण		
3	पाठ्यक्रमकाप्रकार : (कोरकोर्स/ इलेक्टिव/ जेनेरिकइलेक्टिव/ वोकेशनल)	आधार पाठ्यक्रम, द्वितीय प्रश्न-पत्र		
4	पूर्व अपेक्षा : (यदि कोई हो)	स्नातक द्वितीय वर्ष के समस्त विद्यार्थियों के लिए आधार पाठ्यक्रम का यह अनिवार्य प्रश्न-पत्र है।		
5	पाठ्यक्रम अध्ययन के परिलब्धिया (सीएलओ)	इस पाठ्यक्रम का अध्ययन करने के पश्चात विद्यार्थी निम्नलिखित को समझने में सक्षम होंगे : 1. भारत में महिला सशक्तिकरण के इतिहास, अवधारणा और महिला सशक्तिकरण के विभिन्न आयामों को समझ सकेंगे। 2. महिला सशक्तिकरण से संबंधित संवैधानिक प्रावधान, कानून एवं नीतियों को समझ सकेंगे। 3. महिला सशक्तिकरण सम्बन्धी विभिन्न मुद्दों, चुनौतियों एवं सशक्तिकरण में सहायक अभिकरणों का ज्ञान प्राप्त कर सकेंगे इसके साथ ही भारत के शक्तिशाली महिला नेतृत्व की गौरव गाथा से परिचित हो सकेंगे। 4. महिला सशक्तिकरण सम्बन्धी प्रस्तुत अध्ययन विद्यार्थियों को शासकीय, अशासकीय एवं स्वयं सेवी संगठनों में रोजगार के अवसर उपलब्ध करायेगा।		
6	क्रेडिट मान	सैद्धांतिक - 2		
7	कुल अंक	अधिकतम अंक : 50	न्यूनतम उत्तीर्ण अंक : 17	
भाग ब : पाठ्यक्रम की विषय-वस्तु				
व्याख्यान की कुल संख्या - ट्यूटोरियल : 30 घण्टे (प्रति सप्ताह दो घंटे) L-T-P : 2-0-0				

इकाई	विषय	व्याख्यान
I	1. भारत में महिला सशक्तिकरण का इतिहास : प्राचीन काल, मध्यकाल एवं आधुनिक काल। 2. महिला सशक्तिकरण की अवधारणा : अर्थ, स्वरूप आवश्यकता एवं महत्व। 3. महिला सशक्तिकरण के आयाम : सामाजिक, धार्मिक, आर्थिक, शैक्षणिक एवं राजनीतिक। सार बिंदु : महिला सशक्तिकरण, सामाजिक, धार्मिक, आर्थिक, शैक्षणिक, राजनीतिक आयाम।	06

17.4.23

II	1. महिला सशक्तिकरण: संवैधानिक प्रावधान एवं कानून। 2. महिला सशक्तिकरण : नीति एवं योजनाएं (क) केंद्रीय स्तर (ख) राज्य स्तर (म.प्र. के विशेष संदर्भ में) सार बिंदु : संवैधानिक प्रावधान, कानून, केंद्रीय योजनाएँ, राज्य (म.प्र.)योजनाएं	06
III	1. महिला सशक्तिकरण : मुद्दे एवं चुनौतिया। 2. सहायक अभिकरण : गैर सरकारी संगठन, स्व सहायता समूह एवं पंचायती राज संस्थाएं। 3. भारत का शक्तिशाली महिला नेतृत्व : अहिल्या बाई होलकर, रानी दुर्गावती, सावित्री बाई फुले, मैरीकॉम, सिंधुताई सकपाल, टेसी थॉमस, इंदिरा नुई, गौरा देवी। सार बिंदु - गैर सरकारी संगठन, स्व-सहायता समूह, पंचायती राज संस्थाएं, भारत का शक्तिशाली महिला नेतृत्व ।	08
IV	महिलाओं में वित्तीय जागरूकता 1. बजट : उद्देश्य का निर्धारण, लक्ष्यों की स्थापना, लक्ष्यों प्राप्ति हेतु कार्य योजना। पारिवारिक बजट का निर्माण। एक यथार्थवादी बजट : नियम (50 प्रतिशत जरूरत, 30 प्रतिशत चाहत, 20 प्रतिशत बचत)। 2. स्वयं पर होने वाले व्यय की पहचान: अनावश्यक व्यय की पहचान,व्यय पर नियंत्रण की पद्धति। 3. ऋणग्रस्तता एवं बचत की प्राथमिकताएँ ऋण-चक्र जाल (साहूकार / महाजन / निजी संस्थागत ऋण /गिरवीं) ऋण के संभावित कारण एवं समाधान आपातकालीन बचत बुद्धिमान निवेश : सुकन्या योजना, महिला सम्मान बचत सर्टिफिकेट (01 अप्रैल 2023 से लागू) "कमाओं, बचत करो और खर्च करो" की प्राप्ति के लिए कार्ययोजना।	10

भाग स- अनुशंसित अध्ययन संसाधन

अनुशंसित पुस्तकें/सहायक पुस्तकें/ अन्य पाठ्य संसाधन /पाठ्य सामग्री :

1. अंसारी, एम. ए., नारी तुम क्या ?, ज्योति प्रकाशन जयपुर, 2006
2. अंजली, भारत में महिला अपराध, राधा पब्लिकेशन नई दिल्ली, 2005
3. गोयल, संगीता और गोयल, सुनीता, भारतीय समाज में नारी, आर. जी.एस.ए. पब्लिशर्स जयपुर,

17.4.23

2003

4. कौर हरप्रीत, महिलाओं के विरुद्ध हिंसा एवं मद्यपान, अमेजिंग पब्लिकेशन नई दिल्ली 2014

5. कश्यप, आलोक, भारतीय समाज में नारी दशा और दिशा, आर्य पब्लिकेशन नई दिल्ली, 2013

6. नईम मुहम्मद, महिला सशक्तिकरण: चुनौतियां एवं समाधान, यूनिवर्सिटी पब्लिकेशन दिल्ली, 2014

7. सिंह, निशांत, भारतीय महिलाएं एक सामाजिक अध्ययन, ओमेगा पब्लिकेशन, नई दिल्ली 2012

8. सोती, वीरेंद्र, चंद्र, भारतीय संस्कृति में स्त्रियों की स्थिति, डी. के. प्रिंटवर्ल्ड लि. नई दिल्ली, 2009

9. शाह, तृप्ति, (हिंदी) अन, सोनी, रामनरेश, स्त्री जीवन का संघर्ष: प्राचीन काल से भक्ति आंदोलन तक उन्नति विकास शिक्षण संगठन एवं सहियर (स्त्री संगठन)

10. Samiuddin, Abida, and Khanam, R., Women Socio-Economic Empowerment, Globa Vision Publishing House, Ansari Road New Delhi, 2013

11. Tripathi, Madhusoodan, Women Rights in India, Omega Publications, Ansari Road New Delhi, 2011

12. वर्मा, सांवलिया बिहार, महिला जाग्रति और सशक्तिकरण, अविष्कार पब्लिकशर्स, जयपुर 2005

13. वर्मा, सांवलिया बिहारी, ग्रामीण महिला उत्थान, यूनिवर्सिटी पब्लिकेशन दिल्ली, 2011

14. यादव, वीरेंद्र, सिंह, नई सहसाब्दी का महिला सशक्तिकरण : अवधारणा, चिंतन एवं सरोकार ओमेगा पब्लिकेशन, अंसारी रोड नई दिल्ल, 2010

अनुसंसित समकक्ष ऑनलाइन पाठ्यक्रम :

https://nptel.ac.in/

https://swayam.gov.in/explorer

IGNOU & Other centrally/state operated Universities MOOC platforms such as "SWAYAM" in India and Abroad

भाग द- अनुशंसित मूल्यांकन विधियां :

अनुशंसित सतत मूल्यांकन विधियां

अधिकतम अंक : 50

विश्वविद्यालय परीक्षा (वस्तुनिष्ठ) अंक : 50

आंकलन : विश्वविद्यालयीन परीक्षा समय: 01 घण्टे	कुल वस्तुनिष्ठ प्रश्न : 50	50x1 = 50 कुल अंक :50

कोई टिप्पणी सुझाव :

आधार पाठ्यक्रम प्रथम प्रश्नपत्र हिन्दी भाषा –

(भाग–ए)परिचय				
	कार्यक्रम : यू.जी. लेवल डिप्लोमा	कक्षा : बी.ए./बी.कॉम./बी.एससी. /बी.एच.एससी./बी.सी.ए. द्वितीय वर्ष	वर्ष–2022	सत्र 2022–23
क्रं	विषय	आधार पाठयक्रम		
1	कोर्स कोड	**X2-FCEA1T**		
2	कोर्स का शीर्षक	भाषा और संस्कृति		
3	कोर्स का प्रकार	आधार पाठयक्रम		
4	कोर्स अपेक्षित	स्नातक प्रथम वर्ष उत्तीर्ण किसी भी विषय समूह से।		
5	कोर्स अधिगम उपलब्धि (लर्निंग आउटकम) **(CLO)**	1.भारतीय ज्ञान पंम्परा से विद्यार्थियों को अवगत एवं लाभान्वित करना। 2.उत्कृष्ट साहित्यिक पाठों के अध्ययन से रुचि का विकास करना। 3. सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना। 4. भाषा – ज्ञान । 5. सामान्य शब्दावली और विशेष शब्दावली के अध्ययन द्वारा भाषा एवं संस्कृति बोध का विकास करना। 6. विशिष्ट शब्दावली (बीज शब्द / की वडी) से परिचित करवाते हुए बोध के स्तर को विकसित करना।		
6	क्रेडिट मान	02 क्रेडिट		
7	कुल अंक	50 अंक		
8	उत्तीर्ण अंक	17 अंक		
9	समय	1 घंटा		

व्याख्यान की कुल संख्या : वर्ष में अधिकतम 15 घंटे

(भाग–बी) कोर्स सामग्री		
इकाई	विषय	व्याख्यान घंटा
I	1.समसामयिक सन्दर्भ:श्रीमद्भगवद्गीता–कर्मयोग 2.सूर्यकान्त त्रिपाठी निराला : परिचय पाठ : जागो फिर एक बार (दो) (कविता) 3. अमरकान्त : परिचय पाठ : दोपहर का भोजन (कहानी) 4. महादेवी वर्मा : परिचय पाठ : गिल्लू (रेखाचित्र)	05
II	1. हजारी प्रसाद द्विवेदी : परिचय पाठ : नाखून क्यों बढ़ते हैं (ललित निबन्ध) 2. मध्य प्रदेश की लोककलाएँ (संकलित) 3. मध्य प्रदेशकालोकसाहित्य (संकलित)	05
III	1. मुहावरे और कहावतें (भाषा) 2. समास : परिभाषा और भेद (शब्द–रचना / व्याकरण) 3. बीज शब्द (Key Words / अवधारणा मूलक शब्द) उद्योग; सभ्यता; संस्कृति; शिक्षा; सूचना–समाज।	05
सार बिंदु (की वर्ड) टैग		
सर्च करें :–		
सूर्यकान्त त्रिपाठी निराला	जागो फिर एक बार (कविता कोश)	
अमरकान्त	दोपहर का भोजन	
महादेवी वर्मा	गिल्लू (गद्य कोश)	
हजारी प्रसाद द्विवेदी	नाखून क्यों बढ़ते हैं (गद्य कोश)	
उद्योग		
सभ्यता		
संस्कृति		
शिक्षा		
सूचना–समाज		
मुहावरे और कहावतें		
समास परिभाषा और भेद (शब्द रचना / व्याकरण)		

(भाग–सी)

अनुशंसित अध्ययन संसाधन

क्र	पाठ्यपुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन
1	मध्यप्रदे ा हिन्दी ग्रंथ अकादमी से प्रका ित पुस्तकें
2	सूर्यकान्त त्रिपाठी निराला : राग–विराग, संपादक डॉ. रामविलास शर्मा लोक भारती प्रकाशन, इलाहाबाद
3	अमरकान्त प्रतिनिधि कहानियों, राजकमल प्रकाशन, द्वितीय संस्करण
4	महादेवी वर्मा : मेरा परिवार, लोक भारती प्रकाशन, इलाहाबाद, उ.प्र. 1972
5	हजारी प्रसाद द्विवेदी : कल्प लता निबंध संग्रह राजकमल प्रकाशन, दरियागंज, नईदिल्ली 2007
6	डॉ. वासुदेव नंदन प्रसाद : आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, ठाकुर बाडी रोड, पटना, बिहार
7	डॉ. राजेश्वर चतुर्वेदी : हिन्दी व्याकरण, उपकार प्रकाशन, आगरा, उ.प्र.
8	गेपाल भार्गव : मध्यप्रदेश कला एव संस्कृति, कल्पज प्रकाशन, नईदिल्ली 2011
9	हिन्दी ज्ञान कोश
10	अनुशंसित डिजिटल प्लेटफॉर्म वेब लिंक
	1.www.wikipidiya.org
	2.www.egyankosh.ac.in
	3.www.youtube.com
	4.https://epgp.inflibnet.ac.in
	5.hindiwi.org
	6.Kavitakosh.org
	7.https://svayam.gov.in/

भाग द - अनुशंसित मूल्यांकन विधियां:	
अनुशंसित सतत मूल्यांकन विधियां: अधिकतम अंक: 50 विश्वविद्यालयीन परीक्षा (UE) अंक: 50	
आकलन : विश्वविद्यालयीन परीक्षा: समय -02.00 घंटे	कुल अंक 50 न्यूनतम अंक 17

अध्यक्ष

आधार पाठ्यक्रम

केंद्रीय अध्ययन मण्डल भोपाल (म.प्र.)

PART A: Introduction				
Program: **Degree**		Class: **B.Sc.**	Year: **III Year**	Session: **2023-24**
Subject: **Computer Science**				
1.	Course Code	**S3-COSC1D**		
2.	Course Title	**Operating System (Group A – Paper I) (Theory)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Discipline Specific Elective**		
4.	Pre-Requisite (if any)	This course can be opted as an elective by the students of Computer Science.		
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to do the following**: • Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. • Specify objectives of modern operating systems and describe how operating systems have evolved over time. • Understand various process management concepts and can compare various scheduling techniques, synchronization, and deadlocks. • Describe the concepts of multithreading and memory management techniques. • Identify the best suited memory management technique for any process. • Describe various file operations, file allocation methods and disk space management. • To understand and identify potential threats to operating systems and the security features design to guard against them. • Learn to operate the Linux system, along with its administration and Shell programming • Getting to know the Android OS and its application framework.		
6.	Credit Value	**Theory - 4 Credits**		
7.	Total Marks	Max. Marks : **30+70**	Min. Passing Marks: **35**	

PART B: Content of the Course

No. of Lectures (in hours per week): **2 Lectures per week**

Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
I	**Introduction to Operating System**: What is Operating System? History and Evolution of OS, Basic OS functions, Resource Abstraction, Types of Operating Systems– Multiprogramming Systems, Batch Systems, Time Sharing Systems; Operating Systems for Personal Computers, Workstations and Hand-held Devices, Process Control & Real time Systems.	4

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	Keywords: ***Functions of OS, resource abstractions, multiprogramming, time sharing, workstation.***	
II	**Process Management**: Process Concepts, Process states & Process Control Block. **Process Scheduling**: Scheduling Criteria, Scheduling Algorithms (Preemptive & Non- Preemptive) – FCFS, SJF, SRTN, RR, Priority, Multiple-Processor, Real-Time, Multilevel Queue and Multilevel Feedback Queue Scheduling. **Deadlock** - Definition, Deadlock Characterization, Necessary and Sufficient Conditions for Deadlock. **Deadlock Handling Approaches**: Prevention, Avoidance, Detection and Recovery. **Keywords:** ***process states, preemptive and non-preemptive scheduling, FCFS, SJF, RR, deadlock.***	10
III	**Memory Management**: Introduction, Address Binding, Logical versus Physical Address Space, Swapping, Contiguous & Non-Contiguous Allocation, Fragmentation (Internal & External), Compaction, Paging, Segmentation, Virtual Memory, Demand Paging, Performance of Demand Paging, Page Replacement Algorithms. **File Management**: Concept of File System (File Attributes, Operations, Types), Functions of File System, Types of File System, Access Methods (Sequential, Direct & other methods), Directory Structure (Single-Level, Two-Level, Tree-Structured, Acyclic-Graph, General Graph), Allocation Methods (Contiguous, Linked, Indexed). **Keywords:** ***swapping, fragmentation, paging, virtual memory, file management, directory structure.***	10
IV	**Disk Management**: Structure, Disk Scheduling Algorithms (FCFS, SSTF, SCAN, C-SCAN, LOOK), Swap Space Management, Disk Reliability, Recovery. **Security**: Security Threats, Security policy mechanism, Protection, Trusted Systems, Authentication and Internal Access Authorization, Windows Security. **LINUX**: Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux - boot block, super block, inode table, data blocks. Linux standard directories, Linux kernel, Partitioning the hard drive for Linux, installing the Linux system, system - startup and shut-down process, init and run levels. Process, Swap, Partition, fdisk, checking disk free spaces. Difference between CLI OS & GUI OS, Windows v/s Linux, Importance of Linux Kernel, Files and Directories. Concept of Open Source Software. **Keywords:** ***disk scheduling, recovery, authorization, boot block, kernel, partitioning, open source.***	10
V	**Linux Administration**: **Types of user**-Root and normal user, Multiple logins at same time (Ctrl + Alt + F1, F2..F6), who command. **Help**: whatis, --help, man command. **Basic Commands:** For displaying current directory, files and directories of current/absolute/relative location(s), creating, removing, renaming, copying and moving files or directories. For comparing, and editing file content, displaying file content(s) with tr, head, tail, last, grep, sort, piping.	14

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	Searching file content or searching file within different directories based on particular search criteria. For implementing general purpose utilities – calendar, date, calculator, basic arithmetic expressions, compression and extraction of file/directory. **Text editors:** vi, joe, vim, gedit, atom, nano etc. Command mode & Insert mode, cut, yank, undo. **Managing multiple processes**: connecting processes with pipes, tee, redirecting input output, changing process priority with nice, cron commands, kill, ps. **Managing user accounts**- Sudo, users: useradd, usermod, userdel, passwd. **Group**: Primary & Secondary Group, chgrp, chown, groupadd, groupdel. **Permissions**: adding and removing permissions. **Package installation** through GUI/ apt-get/yum/dnf. **Keywords:** ***head, tail, grep, sort, piping, yank, kill, chgrp, chown, groupadd.***	
VI	**Shell Programming**: Types of Shells, Shell Meta Characters - $#, $*,$?, Shell Variables, Shell Scripts, Debugging scripts, echo, read, operators, keywords, Integer Arithmetic and String Manipulation, Functions, I/O Redirection and Piping. **Decision Making**: if-else-elif-fi, case-esac. **Loop Control**: while, for, until, break & continue. **Automation and Exception Handling**: Creating shell programs for automating tasks, file handling, trapping signals etc. **Android Operating System:** Introduction, Development Framework, Application Architecture, Process Management and File System, Small Application Development using Android Development Framework. **Indian contribution to the field** – the BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – Rajen Sheth, Sunder Pichai etc. **Keywords:** ***shell programming, exception handling, Android development framework. BOSS OS, Linux, Arya Bhatt, Rajen Sheth, Sunder Pichai.***	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, John Wiley Publications.
- A.S. Tanenbaum, Modern Operating Systems, Pearson Education.
- J.L.Peterson, Operating System Concepts.
- Sumitabh Das, Linux, TMH.

Reference Books:

- G. Nutt, Operating Systems: A Modern Perspective, Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, Pearson Education.
- M. Milenkovic, Operating Systems- Concepts and Design, Tata McGraw Hill.

Suggestive digital platform web links

https://web.iitd.ac.in/~minati/MTL458.html
https://www.cse.iitb.ac.in/~mythili/os/
https://www.youtube.com/watch?v=aCJ3YgoolHQ

Suggested equivalent online courses

https://nptel.ac.in/courses/106/102/106102132/

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PART D: Assessment and Evaluation		
Suggested Evaluation Methods: **Maximum Marks: 100** **Continuous Comprehensive Evaluation (CCE): 30 Marks** **University Exam (UE): 70 Marks**		
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	Class Tests/ Presentation / Assignment	30 **Marks**
External Assessment: University Exam (UE): Time : **03.00 Hours**	Section (A) : Very Short Questions Section (B) : Short Questions Section (C) : Long Questions	70 **Marks**
Any remarks/suggestions:		

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PART A: Introduction				
Program: **Degree**		Class: **B.Sc.**	Year: **III Year**	Session: **2023-24**
Subject: **Computer Science**				
1.	Course Code	**S3-COSC1Q**		
2.	Course Title	**Operating System Lab (Group A – Paper I) (Practical)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Discipline Specific Elective**		
4.	Pre-Requisite (if any)	This course can be opted as an elective by the students of Computer Science.		
5.	Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to do the following**: • Operate the Linux system, along with its administration and Shell programming. • Understand and be familiar with the Linux environment. • Learn and run the various Linux commands. • Use vi editor for programming. • Learn and run the shell scripting programs.		
6.	Credit Value	**Practical – 2 Credits**		
7.	Total Marks	Max. Marks : **100**	Min. Passing Marks: **35**	

PART B: Content of the Course		
No. of Lab. Practicals (in hours per week): 1 **Lab. per week**		
Total No. of Lab.: **30 Hrs.**		
	Suggestive List of Practicals	**No. of Labs.**
	I. Linux: **a) Linux Directory Commands:** pwd, mkdir, rm -rf, ls, cd, cd / , cd ~ **b) Linux File Commands:** touch, cat, cat >, cat >>, rm , cp, mv, rename **c) Linux Permission Commands:** su, id, useradd, passwd, groupadd, chmod, groupdel, chown, chgrp **d) Linux File Content & Filter Commands:** head, tail, tac, more, less, grep, cat, cut, grep, comm, sed, tee, tr, uniq, wc, od, sort, diff. **e) Linux Utility Commands:** find, bc, locate, date, cal, sleep, time, df, mount, exit, clear, gzip, gunzip. **f) Linux Networking Commands:** ip, ssh, mail, ping, host **g) Edit Crontab file:** to wall message on system on particular time automatically. **h) Vi editor:** Create file, edit, save and quit. Highlighting the searched term within a file, cut, yank, undo. **II. Shell Scripting:** a) Write a shell script to print a message.	30

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	b) Write a shell script to access arguments passed on command line. c) Write a shell script to create files with the names passed on command line. d) Write a shell script to input number from user and display its factorial. e) Write a shell script to input file name and create multiple directories individually for the name in the file given. f) Write a shell script to input number from user and display whether it is prime number or not. g) Write a shell script to list all the files in any directory given by the user h) Write a shell script that receives any number of file names as arguments checks if every argument supplied is a file or a directory.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

- Richard Peterson, Linux: The Complete Reference, TMH
- Sumitabh Das , Linux , McGraw Hill
- Jason Cannon, Linux for Beginners, Createspace Independent Publishing Platform
- William E. Shotts Jr., The Linux Command Line: A Complete Introduction, O'Reilly Media, Inc.

Suggestive digital platform web links

https://web.iitd.ac.in/~minati/MTL458.html
https://www.cse.iitb.ac.in/~mythili/os/
https://www.youtube.com/watch?v=aCJ3YgoolHQ

Suggested equivalent online courses

https://nptel.ac.in/courses/106/102/106102132/
https://www.youtube.com/watch?v=OHCMfsNpqCc

PART D: Assessment and Evaluation

Internal Assessment :		**External Assessment** :	
Class Interaction/Quiz	30	Viva voce practical	70
Attendance		Practical record file	
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training		Table work / Experiments	

Total Marks: 100

Any remarks/ suggestions:

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PART A: Introduction				
Program: **Degree**		Class: **B.Sc.**	Year: **III Year**	Session: **2023-24**
Subject: **Computer Science**				
1.	Course Code	**S3-COSC2D**		
2.	Course Title	**Programming with Python (Group A – Paper II) (Theory)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Discipline Specific Elective**		
4.	Pre-Requisite (if any)	To study this course, a student must have successfully completed the course on Programming at Certificate/Diploma Levels. This course can be opted as an elective by the students of Computer Science.		
5.	Course Learning Outcomes(CLO)	**After studying this subject, students shall be able to –** • Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. • Express proficiency in the handling of strings, functions and file handling. • Determine the methods to create and manipulate Python programs by utilizing the data structures like lists, dictionaries, tuples and sets. • Articulate the Object-Oriented Programming concepts such as encapsulation, inheritance and polymorphism as used in Python with class, modules and packages. • Identify the commonly used operations involving database connectivity and use of tkinter for GUI programming.		
6.	Credit Value	**Theory - 4 Credits**		
7.	Total Marks	Max. Marks : **30+70**	Min. Passing Marks: **35**	

PART B: Content of the Course

No. of Lectures (in hours per week): **2 Lectures per week**

Total No. of Lectures: **60 Hrs.**

Module	Topics	No. of Lectures
I	**Python Basics** : Python interpreter, Python idle, dynamically typed and strongly typed features, basic data types, variables, expressions, statements, operators, flow of execution. Input and Output statements, Conditionals: Boolean values and operators, conditional (if), alternative (if-else), chained conditional (if-elif-else). Iteration: while, for, break, continue, pass, implementing 'for' through range(), 'in' and 'not in' operators for sequence traversal. Creating and executing .py scripts. **Keywords:** ***interpreter, while, for, break, continue, scripts.***	12
II	**Data Structures**: Lists- append, extend, insert, index, remove, pop, count, sort, reverse, slicing, list comprehension, Copying a list: deep copy, shallow copy. Tuples- index, count, usage, use of tuples as a swap function. Dictionaries-keys, values, tuples, nested dictionaries, dictionary	12

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	comprehension. Strings- Single line and multi-line strings, formatter, isdigit, isalpha, isalnum, islower, istitle, isspace, title, lower, upper, strip, split, splitlines, join etc. Sets – union, intersection, subset, superset, difference, symmetric difference, copy, add, remove, discard etc. **Keywords:** ***index, sort, deep copy, tuples, dictionary, sets, strings.***	
III	**Functions & File Handling**: Inbuilt Functions- id, len, chr, ord etc., defining and calling a function, arguments, global versus local variables, defining and using lambda functions, the map(), filter(), reduce() functions. Working with files : read, write and append modes: r, w, a, x, r+, w+, a+, x+, reading-read(), readline(), readlines(), writing-write(), writelines(), seek(), tell(). Word count, copy file scripts through file handling concepts. **Keywords:** ***function, calling a function, arguments, global variables, read, write, copy, seek.***	12
IV	**Classes, modules and exceptional handling**: Classes: Introduction, Member variables and defining methods, constructor, destructor, data encapsulation, inheritance, multiple inheritance, diamond problem solving technique of python. Modules: inbuilt modules- sys, random, time etc. import, from...import, from..import*. Constructing packages, role of __init__.py Exceptional Handling: The try-except-else-finally block, the raise statement, the hierarchy of exceptions, adding exceptions **Keywords:** ***class, constructor, destructor, encapsulation, inheritance, exception, modules.***	12
V	**Database & GUI Programming**: Importing sqlite, connecting to database, creating table, insert, select, update, delete, drop tables, accessing and modifying tables through python. Graphical user interfaces; event-driven programming paradigm; tkinter module, creating simple GUI; buttons, labels, entry fields, dialogs; widget attributes – sizes, fonts, colors layouts, nested frames. **Keywords:** ***GUI, tables, database, insert, update, drop tables, event- driven programming, dialogs, frames.***	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- Taneja Sheetal & Kumar Naveen, "Python Programming: A modular approach", Pearson.
- Liang Y. Daniel, "Introduction to Programming Using Python", Pearson.

Reference Books:

- Zed A. Shaw, "Learn Python the Hard Way", Zed Shaw's Hard Way Series.
- Charles Dierbach, "Introduction to Computer Science using Python", Wiley.
- Michael T. Goodrich, "Data Structures and Algorithms in Python", Wiley.

Suggestive digital platform web links

https://www.guru99.com/how-to-install-python.html
https://www.udemy.com/course/pythonforbeginnersintro/

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https://www.python.org/about/gettingstarted/ https://spoken-tutorial.org/media/videos/89/Python-3.4.3-Instruction-Sheet-English.pdf		
Suggested equivalent online courses		
https://nptel.ac.in/courses/106/106/106106145/ https://www.youtube.com/watch?v=rfscVS0vtbw https://onlinecourses.swayam2.ac.in/aic20_sp33/preview		
PART D: Assessment and Evaluation		
Suggested Evaluation Methods: **Maximum Marks: 100** **Continuous Comprehensive Evaluation (CCE): 30 Marks** **University Exam (UE): 70 Marks**		
Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Tests/ Presentation / Assignment	30 **Marks**
External Assessment: University Exam (UE): Time : **03.00 Hours**	Section (A) : Very Short Questions Section (B) : Short Questions Section (C) : Long Questions	70 **Marks**
Any remarks/suggestions:		

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PART A: Introduction				
Program: **Degree**		Class: **B.Sc.**	Year: **III Year**	Session: **2023-24**
Subject: **Computer Science**				
1.	Course Code	**S3-COSC2Q**		
2.	Course Title	**Python Programming Lab (Group A – Paper II) (Practical)**		
3.	Course Type (Core Course/Elective/Generic Elective/ Vocational	**Discipline Specific Elective**		
4.	Pre-Requisite (if any)	To study this course, a student must have successfully completed the course on Programming at Certificate/Diploma Levels. This course can be opted as an elective by the students of Computer Science.		
5.	Course Learning Outcomes(CLO)	**After studying this subject, students shall be able to –** • Understand the python environment and its text editor. • Code and run the programs. • Debug the program. • Interpret the fundamental Python syntax and semantics and be fluent in the use of Python control flow statements. • Identify the commonly used operations involving database connectivity and use of tkinter for GUI programming.		
6.	Credit Value	**Practical - 2 Credits**		
7.	Total Marks	Max. Marks : **100**	Min. Passing Marks: **35**	

PART B: Content of the Course		
No. of Lab. Practicals (in hours per week): **1 Lab. per week**		
Total No. of Lab.: **30 Hrs.**		
	Suggestive List of Practicals	**No. of Labs.**
	1. Find all numbers which are multiple of 17, but not the multiple of 5, between 2000 and 2500. 2. Print the first 2 and last 3 characters in a given string. Use the string slicing. 3. Write a program that eliminates duplicates in a list. 4. Implement shallow copy and deep copy of a list. 5. Find the largest of n numbers, using a user defined function largest() 6. Write a function that capitalizes all vowels in a string. 7. Read a line containing digits and letters. Write a program to give the count of digits and letters. 8. Write a function myReverse() which receives a string as an input and returns the reverse of the string. 9. Use the list comprehension methodology in python, to generate the squares of all odd numbers in a given list. 10. Generate a dictionary and print the same. The keys of the dictionary should be integers between 1 and 10 (both inclusive). The values should be the cubes of the corresponding keys.	30

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	11. Create a nested dictionary. The roll number of a student maps to a dictionary. This inner dictionary will have name, age, and place as keys. Read details of at least three students. 12. Enter a word. Create a dictionary with the letters of this word as keys, and the corresponding ASCII values as values. 13. Define a class with three methods: readString(), printString(), writeString(). The first method should read the contents of a file. The second method should print the contents to the console. The third method should write the contents to a new file. 14. Create a class account which has constructor to input account_no, name, balance from user, print_account() to display the account details, and deposit(), withdraw() which inputs amount and add/subtract them from the total amount of individual object. 15. Create a database table in sqlite and show the table data in python. 16. Implement DML commands in SQLite from python interface. 17. Implement tkinter methods in a python script.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Textbooks:

- Taneja Sheetal & Kumar Naveen, "Python Programming: A modular approach", Pearson.
- Liang Y. Daniel, "Introduction to Programming Using Python", Pearson.

Reference Books:

- Zed A. Shaw, "Learn Python the Hard Way", Zed Shaw's Hard Way Series.
- Charles Dierbach, "Introduction to Computer Science using Python", Wiley.
- Michael T. Goodrich, "Data Structures and Algorithms in Python", Wiley.

Suggestive digital platform web links

https://www.guru99.com/how-to-install-python.html
https://www.python.org/about/gettingstarted/
https://spoken-tutorial.org/media/videos/89/Python-3.4.3-Instruction-Sheet-English.pdf

Suggested equivalent online courses

https://nptel.ac.in/courses/106/106/106106145/
https://www.youtube.com/watch?v=rfscVS0vtbw
https://onlinecourses.swayam2.ac.in/aic20_sp33/preview

PART D: Assessment and Evaluation

Internal Assessment :		**External Assessment** :	
Class Interaction/Quiz	30	Viva voce practical	70
Attendance		Practical record file	
Assignments (Charts/ Model)/ Technology Dissemination/ Excursion/ Lab visit/ Industrial Training		Table work / Experiments	

Total Marks: 100

Any remarks/ suggestions:

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4. PGDMAD-103: Android Mobile Application Development, ISBN-978-81-940577-2-7 June 2019 by Dr. Babasaheb Ambedkar Open University.
5. PGDMAD-105: Software Lab for Android Mobile Application Development, ISBN-978-81-940577-4-7 June 2019 by Dr. Babasaheb Ambedkar Open University.
6. PGDMAD-201: Advanced Android Mobile Application, ISBN-978-81-940577-5-8 by Dr. Babasaheb Ambedkar Open University.
7. PGDMAD-203: Software Lab for Advanced Android Mobile Application, ISBN-978-81-940577-7-2 by Dr. Babasaheb Ambedkar Open University.
8. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal

Suggestive digital platform web links

2. https://developer.android.com/docs

Suggested equivalent online courses

https://onlinecourses.swayam2.ac.in/nou22_ge57/preview

PART D- Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/Model /Seminar/Rural Service/Technology Dissemination /Report of Excursion/Lab Visits/Survey/ Industrial Visit / Project (including coding, demo and report))			
		Total Marks : 100	

PART A: Introduction

Program: UG	**Class: B.Sc.**	**Year: III**	**Session: 2023-24**

Subject: : **Information Technology**

1.	**Course Code**	**S3-ITEC3D**
2.	**Course Title**	**Operating System Concepts with LINUX (Group B, Paper I)**
3.	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/.....)**	**Discipline Specific Elective (DSE)**
4.	**Pre-requisite (if any)**	Knowledge of computer fundamentals is desirable
5.	**Course Learning outcomes (CLO)**	After completing this course student will learn - • principles of operating system including File handling. • basic Linux commands, Use files for data input and output.

Vrinda Tokekar
17/11/2022
(Dr Vrinda Tokekar)

		• Shell programming, pipes, debugging shell scripts. • Linux file system structure. • About Linux utilities	
6.	**Credit Value**	**4**	
7.	**Total Marks**	Max. Marks: **30+70**	**Min. Passing Marks:35**

PART B: Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P (4-0-0)

Unit	Topics	No. of Lectures (1 Hour Each)
I	**Operating System Introduction**: What Operating Systems Do, Types and Functions, Computer-System Organization, Operating-System Structure, Computer System Architecture, Operating-System Operations, Process Management, Memory Management, Storage Management, Protection and Security, Distributed Systems, Special-Purpose Systems, Computing Environments. **Keywords:** Operating Systems, Computer System Architecture,	12
II	**Operating-System Structures:** Operating-System Services, User Operating-System Interface, System Calls, Types of System Calls, System Programs, Operating-System Design and Implementation, Operating-System Structure, Virtual Machines, Operating-System Generation, System Boot. **Keywords:** System Calls, Virtual Machines, System Boot	12
III	**Introduction to Linux:** LINUX Operating System: GUIs, User Account and Logging In, Gnome, KDE Desktop Environment, LINUX Command line, The Interpreter, The Shell, The CLI over the GUI, Virtual Machine, UNIX AND LINUX, Types of users, The IPOS Cycle, Computer Hardware, Software and Users, Types of Computers, interpreters, Installing Linux. **Keywords: Linux,** CLI, IPOS Cycle	10
IV	**Linux File System Structure and Linux Command**: File Name Specification, File System Commands, locating files, Permissions, Linux files System Structure, Secondary Storage devices, File Compression, Forms of process Management, Starting, pushing and resume process. Linux commands- PATH, man, echo, printf, script, passwd, uname, who, date, stty, pwd, cd, mkdir, rmdir, ls, cp, mv, rm, cat, more, wc, lp, od, tar, gzip, file handling utilities, security by file permissions, process utilities, disk utilities, networking commands, unlink, du, df, mount, umount, find, unmask, ulimit, ps, w, finger, arp, ftp, telnet, rlogin.Text Processing utilities and backup utilities , tail, head , sort, nl, uniq, grep, egrep, fgrep, cut, paste, join, tee, pg, comm, cmp, diff, tr, awk, cpio.	14

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	Keywords: Linux files System Structure, mkdir, rmdir, awk,	
V	**Bash Shell and Shell Scripting**: Bash Feature, Simple Linux Commands, Command Line Editing, Scripts of Linux Instructions, Bash Variables, Input and Output, Selection statement, Loops, Arrays, Functions, Regular Expressions. **Keywords:** Bash Shell, Shell Scripting,	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings:

1. Abraham Silberschatz, Peter Bear Galvin, Greg Gagne, "Operating System Concepts", Ninth Edition.
2. Richard Fox, "LINUX with Operating System Concepts".
3. Robert Love, O'Reilly, "Linux System Programming".
4. W.R.Stevens, Pearson Education., "Advanced Programming in the UNIX environment", 2nd Edition.
5. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal

Suggestive digital platform web links:

1. http://www.cs.put.poznan.pl/akobusinska/downloads/Operating_Systems_Concepts.pdf
2. http://www.cs.nthu.edu.tw/~ychung/slides/CSC3150/Abraham-Silberschatz-Operating-System-Concepts---9th2012.12.pdf
3. http://csit.ust.edu.sd/files/2018/09/Linux-with-Operating-System-Concepts-Fox-Richard-CRC-Press-2014.pdf

Suggested equivalent online courses:

1. https://www.tutorialspoint.com/unix/shell_scripting.htm
2. https://www.guru99.com/unix-linux-tutorial.html

PART D: Assessment and Evaluation

Suggested Continuous Evaluation Methods(CCE):
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): **30 Marks**, University Exam (UE) : **70 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Class Test/ Assignment/ Presentation**	**30**
Internal Assessment: University Exam Time 3:00 Hours	**Section (A)**: Very Short Questions **Section (B)**: Short Questions **Section (C)**: Long Questions	**70**

PART A : Introduction

Program: UG	Class: B.Sc.	Year: III	Session : 2023-24

Subject: **Information Technology**

1.	**Course Code**	**S3-ITEC3Q**
2.	**Course Title**	**Operating System and LINUX Lab (Group B, Paper I)**
3.	**Course Type (Core Course/ Discipline Specific Elective/**	**Discipline Specific Elective (DSE)**

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	Elective/ Generic Elective /Vocational/.....)		
4.	**Pre-requisite (if any)**	Knowledge of computer fundamentals is desirable	
5.	**Course Learning outcomes (CLO)**	After completing this course student will – • become familiar with Linux OS environment • be able to install Linux Operating System • learn shell programming • use shell commands to develop small utilities • understand file structure of Linux	
6.	**Credit Value**	**2**	
7.	**Total Marks**	Max. Marks: **30+70**	**Min. Passing Marks**: 35

PART B: Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P (0-0-2)

Suggestive Programming Assignments	**No. of Lectures (2 Hour Each)**
Programming Assignments to be prepared for students to cover following: 1. Install and Configure a UNIX/Linux System. 2. Execution of various file/directory handling commands; Use vi editor to create files. 3. Simple shell script for basic arithmetic and logical calculation. 4. Write script to display current date, time, user name and current directory. 5. Shell scripts to check various attributes of files and directories. 6. Shell scripts to perform various operations on given strings and find the reverse of a given number. 7. Shell scripts to explore system variables such as PATH, HOME etc. 8. Execution of various basic system administrative commands. 9. Use advanced system commands/tools (i.e.: tar, grep, find, etc.). 10. Write a shell script to display list of users currently logged in. 11. Use seed instruction to process /etc/password file. 12. Perform Disaster Recovery using available backup utilities. 13. Use system administrative commands to change file and directory permissions. 14. To manage the user accounts of the system through creating groups and users. 15. Write a simple shell script - "Hello World!". 16. Commonly Used Commands and Utilities (ls,rm,cat etc – at least 25 commands/utilities). 17. Basic file handling commands (mv, cp, ln, rm etc...). 18. Basic Directory handling commands (mkdir, rmdir, etc...). 19. Exercise: Manipulating files and directories. 20. Create Script for read file, Delete File. 21. Wait command and sleep command.	**30**

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22. Send Email using script.	

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Text Books:

1. Abraham Silberschatz, Peter Bear Galvin, Greg Gagne, "Operating System Concepts", Ninth Edition.
2. Richard Fox, "LINUX with Operating System Concepts".
3. Robert Love, O'Reilly, "Linux System Programming".
4. W.R.Stevens, Pearson Education., "Advanced Programming in the UNIX environment", 2nd Edition.
5. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal

Suggestive digital platform web links

1. http://www.cs.put.poznan.pl/akobusinska/downloads/Operating_Systems_Concepts.pdf
2. http://www.cs.nthu.edu.tw/~ychung/slides/CSC3150/Abraham-Silberschatz-Operating-System-Concepts---9th2012.12.pdf
   http://csit.ust.edu.sd/files/2018/09/Linux-with-Operating-System-Concepts-Fox-Richard-CRC-Press-2014.pdf

Suggested equivalent online courses

https://onlinecourses.nptel.ac.in/noc22_cs78/preview
https://archive.nptel.ac.in/courses/106/105/106105214/
https://nptel.ac.in/courses/117106113

PART D- Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/Model /Seminar/Rural Service/Technology Dissemination /Report of Excursion/Lab Visits/Survey/ Industrial Visit / Project (including coding, demo and report))			
		Total Marks : 100	

PART A: Introduction			
Program: UG	**Class: B.Sc.**	**Year: III**	**Session: 2023-24**
Subject: : **Information Technology**			

1.	**Course Code**	**S3-ITEC4D**
2.	**Course Title**	**Software Engineering (Group B, Paper II)**
3.	**Course Type (Core Course/ Discipline**	**Discipline Specific Elective (DSE)**

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	Specific Elective/ Elective/ Generic Elective /Vocational/.....)		
4.	**Pre-requisite (if any)**	Basic knowledge of Database Management Systems is desirable	
5.	**Course Learning outcomes (CLO)**	After completing this course student will be able to - • understand basic software engineering principles • apply software engineering concepts during software development • do requirement analysis, risk analysis and design test strategies for developing software system • produce a systematic design document useful for coding.	
6.	**Credit Value**	4	
7.	**Total Marks**	Max. Marks: **30+70**	**Min. Passing Marks:35**

PART B: Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P (4-0-0)

Unit	Topics	No. of Lectures (1 Hour Each)
I	**Introduction:** The Evolving Role of Software, Software Characteristics, Software Engineering process: Basic concepts of System Design, Software life cycle, Software process models: Linear Sequential model, Prototyping Model, RAD Model, Evolutionary Process Models like Incremental Model, Spiral Model, Component Assembly Model, RUP and Agile processes, CMM. **Keywords:** Prototyping Model, RAD Model, CMM, RUP and Agile processes	12
II	**Requirement Analysis and Specification**: Software Requirement Analysis, Initiating Requirement Engineering Process, Requirement Analysis and Modeling Techniques, Flow Oriented Modeling, Need for SRS, Characteristics and Components of SRS, Functional and Non-functional requirements. **Software Project Management**: Estimation in Project Planning Process, Project Scheduling. **Keywords:** Software Requirement Analysis, Flow Oriented Modeling	12
III	**Design Engineering**: Overview of System Design, Decomposing the system, System Design Concepts, System Design Activities, Addressing Design Goals, Managing System Design, Design for Web Apps, Design Issues for Web Engineering, Web E Design Pyramid, Interface Design, Architecture Design – Navigation Design – Component Level Design **Keywords:** Design Goals, Architecture Design, Web E Design Pyramid, Web Apps	12
IV	**Risk Management**: Software Risks, Risk Identification, Risk Projection and Risk Refinement, RMMM Plan. **Quality Management**: Quality Concepts, Software Quality Assurance, Software Reviews, Metrics for Process and Projects.	12

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	Keywords: RMMM Plan, Risk Management, Quality Management	
V	**Testing Strategies & Tactics**: Verification and Validation, criteria for completion of testing, unit testing, Integration Testing, Alpha and Beta Testing, System testing, Black-Box Testing, White-Box Testing and their type, Basis Path Testing, Testing Web Applications, Software Maintenance . **Keywords:** Alpha and Beta Testing, Black-Box Testing, White-Box Testing	12

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Text Books

1. R.S. Pressman, "Software Engineering: A Practitioner's Approach" McGraw-Hill, 2009, 7th Edition.
2. P. Jalote, "An Integrated Approach to Software Engineering", Narosa Publishing House, 2003, 2nd Edition.

Reference Books

3. K.K. Aggarwal and Y. Singh, "Software Engineering", New Age International, 2008, 2nd Edition.
4. I. Sommerville, "Software Engineering", Addison Wesley, 2006. 8th edition,
5. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal

Suggestive digital platform web links

3. www.egyankosh.ac.in/handle/123456789/1407
4. www.egyankosh.ac.in/handle/123456789/10291

Suggested equivalent online courses

3. https://nptel.ac.in/courses/106/105/106105182/
4. https://onlinecourses.swayam2.ac.in/cec20_cs07/preview

PART D: Assessment and Evaluation

Suggested Continuous Evaluation Methods(CCE):
Maximum Marks: 100
Continuous Comprehensive Evaluation (CCE): **30 Marks,** University Exam (UE) **: 70 Marks**

Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Class Test/ Assignment/ Presentation**	**30**
Internal Assessment: University Exam Time 3:00 Hours	**Section (A)**: Very Short Questions **Section (B)**: Short Questions **Section (C):** Long Questions	**70**

PART A: Introduction

Program: UG	Class: B.Sc.	Year: III	Session : 2023-24

Subject: **Information Technology**

1.	**Course Code**	**S3-ITEC4Q**
2.	**Course Title**	**Software Engineering Lab (Group B, Paper II)**
3.	**Course Type (Core Course/ Discipline Specific Elective/ Elective/ Generic Elective /Vocational/.....)**	**Discipline Specific Elective (DSE)**

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4.	**Pre-requisite (if any)**	Basic knowledge of Database Management Systems is desirable	
5.	**Course Learning outcomes (CLO)**	After completing this course student will – • apply basic software engineering concepts in software development process • Learn various steps in project management • Experience the importance of software testing during • Prepare the analysis and design documents necessary for coding	
6.	**Credit Value**	**2**	
7.	**Total Marks**	Max. Marks: **30+70**	**Min. Passing Marks**: 35

PART B: Content of the Course

Total No. of Lectures-Tutorials-Practical (in hours per week): L-T-P (0-0-2)

Suggestive Programming Assignments	**No. of Lectures (2 Hours Each)**
Note: Do **the** Analysis and produce document in following format: Problem statement, process model adopted, Requirement Analysis (creating data flow, data dictionary, use case), Project Management(schedule, risk table, timeline chart,), Architectural design, data design, component level design, basis path testing **Sample Projects: (min. 5)** 1. Criminal Record Management: Implement a criminal record management system for jailers, police officers and CBI officers 2. DTC Route Information: Online information about the bus routes and their frequency and fares 3. Car Pooling: To maintain a web based intranet application that enables the corporate employees within an organization to avail the facility of carpooling effectively. 4. Patient Appointment and Prescription Management System 5. Organized Retail Shopping Management Software 6. Online Hotel Reservation Service System 7. Examination and Result computation system 8. Automatic Internal Assessment System 9. Parking Allocation System 10. Wholesale Management System	30

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings

Text Books

1. R.S. Pressman, "Software Engineering: A Practitioner's Approach" McGraw-Hill, 2009, 7th Edition.
2. P. Jalote, "An Integrated Approach to Software Engineering", Narosa Publishing House, 2003, 2nd Edition.

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Reference Books

3. K.K. Aggarwal and Y. Singh, "Software Engineering", New Age International, 2008, 2nd Edition.
4. Sommerville, "Software Engineering", Addison Wesley, 2006. 8th edition,
5. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal

Suggestive digital platform web links

1. www.egyankosh.ac.in/handle/123456789/1407
2. www.egyankosh.ac.in/handle/123456789/10291

Suggested equivalent online courses

1. https://nptel.ac.in/courses/106/105/106105182/

https://onlinecourses.swayam2.ac.in/cec20_cs07/preview

PART D- Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/Model /Seminar/Rural Service/Technology Dissemination /Report of Excursion/Lab Visits/Survey/ Industrial Visit / Project (including coding, demo and report))			
		Total Marks : 100	

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Part A Introduction				
Program: Degree Course		**Class:** B.A./B.Sc. III Year	**Year:** 2023	**Session:** 2023-2024
Subject: Mathematics				
1	Course Code	**S3-MATH2T**		
2	Course Title	**Fundamentals of Boolean Algebra** (Theory)		
3	Course Type	Minor		
4	Pre-requisite (if any)	To study this course, a student must have had the subject Mathematics in Diploma Course or equivalent.		
5	Course Learning Outcomes (CLO)	The course will enable the students: 1. Using the Boolean algebra in logical problems. 2. Minimize the Boolean Function using Karnaugh Map. 3. Understanding the various logic gates. 4. Applying the circuits in logical problems.		
6	Credit Value	**Theory:** 6 Credit		
7	Total Marks	Max. Marks: 30 + 70	Min. Passing Marks: 35	

Part B - Content of the Course		
Total No. of Lectures (in hours per week): 3 hours per week **Total Lectures:** 90 hours		
Unit	Topics	No. of Lectures
I	1.1 Indian logic 1.1.1 Origins 1.1.2 The schoolsVaisheshika 1.1.3 Catuskoti 1.1.4 Nyaya 1.1.5 Jain logic 1.1.6 Buddhist logic 1.1.7 Navya-Nyaya 1.1.8 Influence of Indian logic on modern logic 1.1.9 Boolean Logic and Indian Thoughts 1.2 Boolean Algebra: 1.2.1 Truth Tables 1.2.2 Properties of Boolean Algebra 1.2.3 Principle of Duality 1.2.4 De Morgan's Theorem	18
II	**Boolean Function:** 2.1 Boolean Expression 2.2 Boolean Function 2.3 Min-term or Minimal Boolean Function 2.4 Disjunctive Normal Form or Canonical Form 2.5 Complete Disjunctive Normal Form or Complete Canonical Form 2.6 Boole's Expansion Theorem	30

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	2.7 Complement Function of a Boolean Function in Disjunctive Normal Form 2.8 Max-term or Maximal Boolean Function 2.9 Conjunctive Normal Form or Dual Canonical Form 2.10 Complete Conjunctive Normal Form 2.11 Complement Function of a Boolean Function in Conjunctive Normal Form 2.12 SOP & POS Forms 2.13 Minimize the Boolean function using Karnaugh-Map upto 3 variables.	
III	**Logic Gates:** 3.1 AND Gate 3.2 OR Gate 3.3 NOT Gate 3.4 NAND Gate 3.5 NOR Gate 3.6 XOR Gate 3.7 XNOR Gate 3.8 Buffer Gate 3.9 Universal Gate 3.10 Applications of Logic Gates	18
IV	**Circuits:** 4.1 Switching Circuits 4.2 Parallel Circuits 4.3 Series Circuits 4.4 Relay Circuit 4.5 Various Positions of Switches and Currents in Electric Circuits 4.6 Simple Arithmetic and Logic Circuits 4.7 Combinational Circuits 4.7.1 Adder 4.7.2 Subtractor 4.8 Simple Combinational Circuit Design Problems	24
Keywords/Tags: Boolean Algebra, Boolean function, Logic Gates, Logic Circuits.		

Part C - Learning Resources
Text Books, Reference Books, Other Resources
Suggested Readings: **Text Books:** 1. J. P. Tremblay and R. Manohar, Discrete Mathematical Structures With Applications To Computer Science, McGraw Hill Education, 1st edition, 2017. 2. C. L. Liu: Elements of Discrete Mathematics, McGraw Hill Education, 4th edition, 2017.

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3. Elliott Mendelson: Boolean Algebra and Switching Circuits, McGraw Hill, 2020.
4. Satinder Bal Gupta, C. P. Gandhi: Discrete Structures, Laxmi Publication, 2010.
5. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।

Reference Books:

1. Seymour Lipschutz and Mark Lipson: Discrete Mathematics (Schaums Outline), McGraw Hill Education, 3rd edition, 2017.
2. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, Pearson Education Pt. Ltd., Indian Reprint 2003.

Suggested Digital Platforms Web links:
https://www.eshiksha.mp.gov.in/mpdhe
Suggested Equivalent online courses:
https://nptel.ac.in/courses/111106086/
https://ugcmoocs.inflibnet.ac.in/index.php/courses/view_ug/311

Part D: Assessment and Evaluation	
Suggested Continuous Evaluation Methods: Maximum Marks: **100** Continuous Comprehensive Evaluation (CCE): **30** Marks University Exam (UE): **70** Marks	
Internal Assessment: Continuous Comprehensive Evaluation (CCE)	**Total Marks: 30**
External Assessment: University Exam (UE)	**Total Marks: 70**

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Date: 29.11.2022

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Name: Dr. Anil Rajput

भाग अ - परिचय				
कार्यक्रम: डिग्री पाठ्यक्रम		कक्षा: बी.ए./बी.एससी. तृतीय वर्ष	वर्ष: 2023	सत्र: 2023-2024
विषय: गणित				
1	पाठ्यक्रम का कोड	S3-MATH2T		
2	पाठ्यक्रम का शीर्षक	बूलीयन बीजगणित के मूलतत्व (सैद्धांतिक)		
3	पाठ्यक्रम का प्रकार	गौण		
4	पूर्वापेक्षा (Prerequisite)	इस पाठ्यक्रम का अध्ययन करने के लिए, विद्यार्थी के पास डिप्लोमा या समकक्ष पाठ्यक्रम में गणित विषय होना चाहिए।		
5	पाठ्यक्रम अध्धयन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	पाठ्यक्रम विद्यार्थियों को सक्षम करेगा: 1. तार्किक समस्याओं में बूलियन बीजगणित का उपयोग करना। 2. कारनाफ.मैप का उपयोग करके बूलियन फलन को न्यूनतम करना 3. विभिन्न तार्किक द्वार की समझ। 4. तार्किक समस्याओं में परिपथों को लागू करना।		
6	क्रेडिट मान	सैद्धांतिक: 6 क्रेडिट		
7	कुल अंक	अधिकतम अंक: 30 + 70	न्यूनतम उत्तीर्ण अंक: 35	

भाग ब - पाठ्यक्रम की विषयवस्तु व्याख्यान की कुल संख्या (प्रति सप्ताह घंटे में): प्रति सप्ताह 3 घंटे कुल व्याख्यान: 90 घंटे		
इकाई	विषय	व्याख्यान की संख्या
I	1.1 भारतीय तर्क 1.1.1 मूल 1.1.2 स्कूल वैशेषिक 1.1.3 कैटुस्कोटी 1.1.4 न्याय 1.1.5 जैन तर्क 1.1.6 बौद्ध तर्क 1.1.7 नव्या-न्याय 1.1.8 आधुनिक तर्क पर भारतीय तर्क का प्रभाव	18

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	1.1.9 बूलियन तर्क और भारतीय विचार 1.2 बूलीयन बीजगणित: 1.2.1 सत्यता सारणी 1.2.2 बूलीयन बीजगणित के गुणधर्म 1.2.3 द्वैतता का सिद्वांत 1.2.4 डी-मार्गन प्रमेय	
II	**बूलीयन फलनः** 2.1 बूलीयन व्यंजक 2.2 बूलीयन फलन 2.3 न्यून-पद या निम्निष्ठ बूलीयन फलन 2.4 वियोजनीय प्रसामान्य रूप या विहित रूप 2.5 पूर्ण वियोजनीय प्रसामान्य रूप या पूर्ण विहित रूप 2.6 बूल का प्रसार प्रमेय 2.7 वियोजनीय प्रसामान्य रूप में बूलीयन फलन का पूरक फलन 2.8 अधिक-पद या उच्चिष्ठ बूलीय फलन 2.9 संयोजनीय प्रसामान्य रूप या द्वैत विहित रूप 2.10 पूर्ण संयोजनीय प्रसामान्य रूप 2.11 संयोजनीय प्रसामान्य रूप में बूलीयन फलन का पूरक फलन 2.12 SOP और POS रूप 2.13 कारनाफ-मैप का उपयोग कर 3 चरों तक के बूलियन फलन को न्यूनतम करना	30
III	**तार्किक द्वारः** 3.1 AND द्वार 3.2 OR द्वार 3.3 NOT द्वार 3.4 NAND द्वार 3.5 NOR द्वार 3.6 XOR द्वार 3.7 XNOR द्वार 3.8 बफर द्वार	18

	3.9 सार्वत्रिक द्वार 3.10 तार्किक द्वार के अनुप्रयोग	
IV	**परिपथः** 4.1 स्विचिंग परिपथ 4.2 समान्तर परिपथ 4.3 श्रेणी परिपथ 4.4 रिले परिपथ 4.5 वैद्युत परिपथ में स्विच और करंट की विभिन्न स्थितियाँ 4.6 सरल अंकगणित और तार्किक परिपथ 4.7 संयोजन परिपथ 4.7.1 योजक 4.7.2 व्यवकलित्र 4.8 सरल संयोजन परिपथ डिजाइन समस्या	24
सार बिंदु (की वर्ड)/टैग : बूलीयन बीजगणित, बूलीयन फलन, तार्किक द्वार, परिपथ।		

भाग स- अनुशंसित अध्ययन संसाधन
पाठ्य पुस्तक, संदर्भ पुस्तकें, अन्य संसाधन
अनुशंसित सहायक पुस्तकें /ग्रन्थ/अन्य पाठ्य संसाधन/पाठ्य सामग्री : **पाठ्य पुस्तकें :** 1. J. P. Tremblay and R. Manohar, Discrete Mathematical Structures With Applications To Computer Science, McGraw Hill Education, 1st edition, 2017. 2. C. L. Liu: Elements of Discrete Mathematics, McGraw Hill Education, 4th edition, 2017. 3. Elliott Mendelson: Boolean Algebra and Switching Circuits, McGraw Hill, 2020. 4. Satinder Bal Gupta, C. P. Gandhi: Discrete Structures, Laxmi Publication, 2010. 5. मध्य प्रदेश हिन्दी ग्रंथ अकादमी की पुस्तकें।
सन्दर्भ पुस्तकें : 1. Seymour Lipschutz and Mark Lipson: Discrete Mathematics (Schaums Outline), McGraw Hill Education, 3rd edition, 2017. 2. Edgar G. Goodaire and Michael M. Parmenter, Discrete Mathematics with Graph Theory, Pearson Education Pt. Ltd., Indian Reprint 2003.

Name of BOS: Mathematics
Date: 29.11.2022

Signature of the Chairman (BOS):
Name: Dr. Anil Rajput

अनुशंसित डिजिटल प्लेटफॉर्म वेब लिंक : https://www.eshiksha.mp.gov.in/mpdhe **अनुशंसित समकक्ष ऑनलाइन पाठ्यक्रम:** https://nptel.ac.in/courses/111106086/ https://ugcmoocs.inflibnet.ac.in/index.php/courses/view_ug/311

भाग द - अनुशंसित मूल्यांकन विधियां	
अनुशंसित सतत मूल्यांकन विधियां: अधिकतम अंक: **100** सतत व्यापक मूल्यांकन (CCE): **30** अंक विश्वविद्यालय परीक्षा (UE): **70** अंक	
आंतरिक मूल्यांकनः सतत व्यापक मूल्यांकन (CCE):	कुल अंक : 30
वाह्य मूल्यांकनः **विश्वविद्यालयीन परीक्षा:**	कुल अंक : 70

Name of BOS: Mathematics
Date: 29.11.2022

Signature of the Chairman (BOS):
Name: Dr. Anil Rajput

Part A - Introduction				
Program: Degree		**Class:** B.Sc.	**Year:** III	**Session:** 2023-2024
Subject: Physics				
1.	**Course Code**	S3-PHYS2T		
2.	**Course Title**	**Quantum Mechanics, Solid State Physics and Devices (Theory)**		
3.	**Course Type (Core/ Discipline Specific Elective/Generic Elective/Vocational/...)**	Minor/Elective		
4.	**Pre- requisite (If any)**	To study this course, the student must have had Physics as a subject in Diploma.		
5.	**Course Learning Outcomes (CLO)**	On completion of the course, the students will be able to 1. Understand the necessity of quantum mechanics and its applications. 2. Explain the atomic structures and X-rays. 3. Identify the molecular spectra such as electronic, rotational and vibrational. 4. Identify the various materials using the Raman spectroscopic technique. 5. Use different types of diodes and transistors in various electronic applications. 6. Analyze the amplifiers and oscillators.		
6.	**Credit Value**	4		
7.	**Total Marks**	Max. Marks: 30+70		Min. Passing Marks: 35

Part B - Content of the Course		
Total number of Lectures (in hours per week): 2		
Unit	**Topics**	**Number of Lectures (1 Hour each)**
I	**Introduction to Quantum Mechanics** 1. A brief biography of Chandrasekhara Venkata Raman and their major contribution to science. 2. Limitations of classical mechanics and origin of quantum mechanics, Black body radiation, Photoelectric effect, Compton effect, De-Broglie hypothesis, Davisson-Germer experiment, Wave packet, Phase velocity and Group velocity. 3. Heisenberg uncertainty principle, Different forms of uncertainty principle, Schrödinger wave equation: Time	12

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	dependent and time independent equation, Physical interpretation of wave function, Equation of Continuity. 4. Operator in quantum mechanics: Eigenfunctions and Eigenvalues, Hermitian operator, Position and Momentum operator, Total energy operator (Hamiltonian), Expectation value, Parity operator, Ehrenfest Theorem. **Keywords/Tags:** Quantum mechanics, Uncertainty principle, Eigenfunctions.	
II	**Application of quantum Mechanics and Atomic structure** 1. Application of Schrödinger equation: Free particle, Particle in one-dimensional box, Rectangular potential barrier, Tunnel effect, One dimensional Harmonic Oscillator. 2. Three dimensional Schrödinger equation, The radial and angular equation, Hydrogen atom, electron probability density. 3. Bohr's atomic model, Atomic spectra of Hydrogen, Sommerfeld model, electron spin, Stern – Gerlach experiment, Orbital and spin angular momentum, Concept of space quantization, Quantum numbers. **Keywords/Tags:** Tunnel effect, Harmonic Oscillator, Quantum numbers, Atomic model.	**12**
III	**Many – Electron atom** 1. Pauli's exclusion principle, Electronic configuration, Symmetric and antisymmetric wave function (Bosons and Fermions). 2. Spin - Orbit interaction, Selection rules, Spectra of alkaline atom, Fine structure of Sodium D line, Spectral terms of two electron atoms, L-S and j-j coupling, Multiplicity of energy levels, Spectra of Helium atom, Zeeman effect: Types and Experimental arrangement. 3. Various types of molecular spectra, Electronic, Rotational and vibrational spectra of diatomic molecule, Raman effect: Experimental setup and explanation by quantum	**12**

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	principle, Production of X-rays, Continuous and characteristics X- ray spectrum, Moseley's law. **Keywords/Tags:** Exclusion principle, Bosons and Fermions, Spin - Orbit interaction, Molecular spectra, X-rays.	
IV	**Solid State Physics** 1. Crystalline and amorphous solids, Space lattice; Basis, Lattice translational vector, Primitive cell, Bravais lattice, Seven crystal systems, Symmetry, Miller indices, Interplanar spacing. 2. Crystal structures: Simple cubic, Face centered cubic (NaCl), Body centred cubic (CsCl), Hexagonal closed packed, Diamond structure, Coordination numbers and atomic packing fraction, Laue's and Bragg's equations, Reciprocal lattice. 3. Dulong and Petit's theory of Specific heat, Einstein's theory of specific heat, Debye's theory of specific heat, Lattice vibrations in crystal: Mono-atomic lattice vibration and dispersion relation, Brillouin Zones, Concept of phonons, Lorentz Drude theory, Ohm's Law ($J = \sigma E$), Wiedemann Frenz law, Hall effect. **Keywords/Tags:** Crystalline solids, Primitive cell, Crystal structures, Reciprocal lattice, Brillouin Zones.	**12**
V	**Semiconductor and Devices** 1. Energy bands in solids, Intrinsic and extrinsic semiconductors; Fermi energy level, Mobility, Conductivity of semiconductors, Concentration of electrons and holes in semiconductors. 2. P-N Junction, depletion layer, Potential barrier, Shockley diode equation (without derivation), Zener diode and its application, Elementary knowledge of photodiode, Light Emitting diode and Solar cell, Bipolar Junction Transistors and its characteristic curves, Current gains (α, β and γ), Junction Field Effect Transistor. 3. Amplifiers and their classification, Single stage common emitter amplifier, Q-point, load line and frequency	**12**

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	response curve, Feedback amplifiers, Barkhausen criterion, Phase shift and Wien bridge oscillator. **Keywords/Tags:** Semiconductors, P-N Junction, Amplifiers, Oscillator.	

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Beiser A., "Concept of Modern Physics", Mc Graw Hill.
2. Ghatak, Loknathan, "Quantum Mechanics", Mc Milan.
3. Mani H.S., Mehra G.K., "Introduction to Modern Physics", East West Press, 1989
4. Rajam J.B.,"Modern Physics", S. Chand.
5. Schiff L.I., "Quantum Mechanics", McGraw Hill Education, 4th edition, 2017.
6. White. H. E., "Introduction to Atomic spectra", McGraw Hill Education.
7. Griffiths D. J., "Introduction to Quantum Mechanics", Cambridge University Press.
8. Kittel Charles, "Introduction to Solid State Physics", Wiley India Pvt. Ltd., India, (2007), 7th Edition.
9. Omar M. Ali, "Elementary Solid State Physics", Pearson Education, India, (2009), 6th Edition.
10. Singhal R. L., P. A. Alvi, et. Al., "Solid State Physics", Kedar Nath Ram Nath and Co., (2018),
11. Chattopadhyay D., Rakshit P.C., "Electronic Fundamentals and Application", New Age International, (2020).
12. Srivastava J. P., "Elements of Solid State Physics", Prentice Hall of India, 2011, 3rd edition.
13. Ashcroft Neil W., Mermin N. David., "Solid State Physics" Harcourt College Publishing, New York, 2019.
14. Gupta S. L., Kumar V., "A Hand Book of Electronics", Pragati Prakashan, India, 2013, 19th Edition.
15. Malvino Albert Paul, Bates David, "Electronic Principles", McGraw Hill International Edition, India, (2006), 7th Edition.
16. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal.

Suggested web links:

1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.).
2. https://youtu.be/KSgzRxzhzrQ?list=PLCvpYrhOPdiX6-GqRU3eVMKScNP4jedGi Modern Physics by Prof. V. Ravishankar, IIT Delhi.
3. https://youtu.be/THZNfDdt_w0?list=PL8g67naApM8hmh2mw19NX4fP1663Hc9jt Quantum physics by H. C. Verma, IIT Kanpur
4. https://youtu.be/xlrvgLUsKqU?list=RDCMUCLI5I1QwKqQn0Cf4nzdGKeQ Quantum Mechanics by Prof. P. Ramadevi, IIT Bombay.

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5. https://youtu.be/RJOCEz7wd0?list=PLbMVogVj5nJQ5jqiXDYuE6ETz5F5Kn4dA Structure of Materials by Prof. Sandeep Sangal & Dr. Anandh Subramaniam, IIT Kanpur.
6. https://youtu.be/L-eOdZFt9BY Condensed Matter Physics by Prof. G. Rangarajan, Department of Physics, IIT Madras.
7. https://youtu.be/Kp-jS6NHsB8?list=PLF178600D851B098F Lecture Series on Solid State Devices by Dr. S. Karmalkar, IIT Madras.
8. https://youtu.be/g7vYop_46tU?list=PL708EEA8184EA8F53 Electronics by Prof. D.C. Dube, Department of Physics, IIT Delhi.

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Maximum Marks : 100

Continuous Comprehensive Evaluation (CCE) : 30 Marks

University Exam (UE) : 70 Marks

Internal Assessment : Continuous Comprehensive Evaluation (CCE)	Class Test/ Assignment/Presentation	30 Marks
External Assessment : University Exam Section Time : 03:00 Hours	Section (A): Very Short Questions Section (B): Short Questions Section (C): Long Questions	70 Marks

Any remarks/ suggestions:

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Part A – Introduction				
Program: Degree		**Class:** B.Sc.	**Year:** III	**Session:** 2023-2024
Subject: Physics				
1.	**Course Code**	S3-PHYS2P		
2.	**Course Title**	**Quantum Mechanics,Solid StatePhysics andDevices Lab (Practical)**		
3.	**Course Type (Core/Discipline Specific Elective/Generic Elective/Vocational/…)**	Minor/Elective		
4.	**Pre- requisite (If any)**	To study this course, the student must have had Physics as a subject in Diploma.		
5.	**Course Learning Outcomes (CLO)**	On completion of the course, the students will be able to 1. Determine of Planck's constant and Rydberg's constant using different methods. 2. Determine electronic charge and specific charge of electron. 3. Determine the first excitation potential of gas (argon) by Franck Hertz experiment. 4. UseConstant deviation spectrometer and Fabry-Parot Interferometer. 5. Develop the practical knowledge about solid state physics and electronic devices. 6. Draw the characteristic curves of different diodes and transistors. 7. Understand the working principle of amplifiers and oscillators.		
6.	**Credit Value**	**2**		
7.	**Total Marks**	Max. Marks: 100	Min. Passing Marks: 35	

Part B - Content of the Course		
Total numbers of Lectures - Practical (in hours per week): 2		
Sr. No.	**List of experiments**	**No. of Lectures (2 Hours Each)**
1.	To determine the Rydberg's constant using hydrogen discharge tube.	**30**
2.	To determine thePlanck's constants using light emitting diode.	
3.	To determine the of specific charge e/m by Thomson's method.	
4.	To determine the of Plank's constant using Photo cell.	
5.	To determine the first excitation potential of gas (argon) by Franck	

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	Hertz experiment.	
6.	To observe the Zeeman splitting of green mercury line using Fabry-Parot Etalon for normal transverse and longitudinal configuration.	
7.	To measure the wavelength of a mercury source spectrum by constant deviation spectrograph and calibration of drum.	
8.	To determine the electronic charge with the help of Millikan's oil drop method.	
9.	To study the absorption spectra of iodine vapour.	
10.	To draw the characteristic curves of a Photo cell and determine stopping potential.	
11.	To study characteristic curve of a PN Junction diode.	
12.	To study characteristics curve ofa Zener diode.	
13.	To study characteristicscurve of a light emitting diode (LED).	
14.	To determine the energy band gap of a semiconductor using P-N diode in reverse bias.	
15.	To study characteristics curves of PNP/ NPN transistor in common emitter mode configuration and determination current gain.	
16.	To study characteristics curves of Junction field effect transistor.	
17.	To study single stage RC amplifier.	
18.	To study Wien bridge oscillator.	
19.	To study the characteristic curve of Photodiode.	
20.	To studythecharacteristic curve of solar cell.	

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

1. Prakash I. & Ramakrishna, "A Text Book of Practical Physics", Kitab Mahal, 2011,11/e.
2. Squires G. L., "Practical Physics", Cambridge University Press, 2015, 4/e.
3. Flint B. L. and Worsnop H. T., "Advanced Practical Physics for students", Asia Publishing House, 197.
4. Chattopadhyay D. & Rakshit P. C., "An Advanced Course in Practical Physics", New Central Book Agency.
5. Chattopadhyay D., Rakshit P.C. and Saha B., "An Advanced Course in Practical Physics", New Central Book Agency P. Ltd.
6. Singh S.P., "Advanced Practical Physics", Pragati Prakashan.
7. Tayal D. C., "University Practical Physics", Himalaya Publishing House
8. Kumar P. R. Sasi, " Practical Physics", PHI Publication
9. Srivastava Anchal, Shukla R. K., " Practical Physics", New Age International Publishers.
10. Agarwal D. C., "Experimental electronics", Technical Publishing House.
11. Srivastava J. P., " Elements of Solid state Physics", PHI Publication,
12. Books published by Madhya Pradesh Hindi Granth Academy, Bhopal.

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Suggested web links

1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.).
2. https://www.vlab.co.in/broad-area-physical-sciences
3. https://storage.googleapis.com/uniquecourses/online.html
4. https://www.vlab.co.in/broad-area-physical-sciences
5. https://storage.googleapis.com/uniquecourses/online.html

Part D-Assessment and Evaluation

Suggested Continuous Evaluation Methods:

Internal Assessment	Marks	External Assessment	Marks
Class Interaction /Quiz	30	Viva Voce on Practical	70
Attendance		Practical Record File	
Assignments (Charts/ Model Seminar / Rural Service/ Technology Dissemination/ Report of Excursion/ Lab Visits/ Survey / Industrial visit)		Table work / Experiments	
TOTAL	Total Marks : 100		

Any remarks/ suggestions:

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भाग अ - परिचय			
कार्यक्रम: डिग्री	कक्षा: बी.एससी.	वर्ष: III	सत्र: 2023-2024

विषय - भौतिकशास्त्र

1.	पाठ्यक्रम का कोड	S3-PHYS2T	
2.	पाठ्यक्रम का शीर्षक	क्वांटम यांत्रिकी, ठोस अवस्था भौतिकी एवं युक्तियाँ (सैद्धांतिक)	
3.	पाठ्यक्रम का प्रकार :(कोर कोर्स/इलेक्टिव/जेनेरिक इलेक्टिव/वोकेशनल/...)	माइनर / इलेक्टिव	
4.	पूर्वापेक्षा (Prerequisite) (यदि कोई हो)	इस कोर्स का अध्ययन करने के लिए छात्र के पास डिप्लोमा में भौतिक शास्त्र एक विषय के रूप में होना चाहिए।	
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	पाठ्यक्रम पूरा होने पर, छात्र सक्षम होंगे 1. क्वांटम यांत्रिकी की आवश्यकता एवं इसके अनुप्रयोगों को समझने में। 2. परमाणु संरचनाओं एवं एक्स-रे की व्याख्या करने में। 3. इलेक्ट्रॉनिक, घूर्णी एवं कंपन जैसे आणविक स्पेक्ट्रा को पहचानने में। 4. रमन स्पेक्ट्रोस्कोपिक तकनीक का उपयोग कर विभिन्न पदार्थों को पहचानने में। 5. विभिन्न प्रकार के इलेक्ट्रॉनिक युक्तियाँ में कई प्रकार के डायोड एवं ट्रांजिस्टर का उपयोग करने में। 6. प्रवर्धकों एवं दोलित्रों का विश्लेषण करने में।	
6.	क्रेडिट मान	4	
7.	कुल अंक	अधिकतम अंक: 30+70	न्यूनतम उत्तीर्ण अंक: 35

भाग ब - पाठ्यक्रम की विषयवस्तु

व्याख्यानों की कुल संख्या (प्रति सप्ताह घंटे में): 2

इकाई	विषय	व्याख्यानों की संख्या (1 घंटा प्रत्येक)
I	**क्वांटम यांत्रिकी का परिचय** 1. चंद्रशेखर वेंकट रमन की एक संक्षिप्त जीवनी एवं विज्ञान में उनके प्रमुख योगदान के साथ।	12

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	2. चिरसम्मत यांत्रिकी की सीमाएं एवं क्वांटम यांत्रिकी की उत्पत्ति, कृष्ण पिंड स्पेक्ट्रम, प्रकाश विद्युत प्रभाव, काम्पटन प्रभाव, डी ब्रोग्ली परिकल्पना, डेविसन जर्मर प्रयोग, तरंग पैकेट, कला वेग एवं समूह वेग। 3. हाइजेनबर्ग का अनिश्चितता सिद्धांत, अनिश्चितता सिद्धांत के विभिन्न रूप, श्रोडिंगर तरंग समीकरण: समय पर निर्भर तथा समय पर अनिर्भर समीकरण, तरंग फलन की भौतिक व्याख्या, सातत्य समीकरण। 4. क्वांटम यांत्रिकी में संकारक: आइगन मान तथा आइगन फलन, हरमीशियन संकारक, स्थिति तथा संवेग संकारक, संपूर्ण ऊर्जा (हैमिल्टोनियन) संकारक, प्रत्याशा (संभावित) मान, समता संकारक, एहरेनफेस्ट प्रमेय। **सार बिंदु (की वर्ड)/टैग:** क्वांटम यांत्रिकी, अनिश्चितता सिद्धांत, आइगन फलन।	
II	**क्वांटम यांत्रिकी के अनुप्रयोग एवं परमाणु संरचना** 1. श्रोडिंगर समीकरण के अनुप्रयोग : मुक्त कण, एकविमीय बॉक्स में कण, आयताकार विभव प्राचीर, सुरंगन प्रभाव, एकविमीय आवर्ती दोलित्र। 2. त्रिविमीय श्रोडिंगर समीकरण, त्रिज्यीय एवं कोणीय समीकरण, हाइड्रोजन परमाणु, इलेक्ट्रॉन संभाव्यता घनत्व। 3. बोर परमाणु मॉडल, हाइड्रोजन का परमाणु स्पेक्ट्रा, सोमरफील्ड मॉडल, इलेक्ट्रॉन चक्रण (स्पिन), स्टर्न-गर्लेक प्रयोग, कक्षीय एवं स्पिन कोणीय संवेग, अंतरिक्ष परिमाणीकरण की अवधारणा, क्वांटम संख्या। **सार बिंदु (की वर्ड)/टैग:** सुरंगन प्रभाव, आवर्ती दोलित्र, क्वांटम संख्या, परमाणु मॉडल।	12
III	**बहुइलेक्ट्रॉनी परमाणु** 1. पाउली का अपवर्जन नियम, इलेक्ट्रॉनिक विन्यास, सममित एवं असममित तरंग फलन(बोसॉन एवं फर्मिऑन)।	12

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	2. चक्रण - कक्षा परस्पर क्रिया, वरण नियम, क्षारीय परमाणु का वर्णक्रम, सोडियम D रेखा की सूक्ष्म संरचना, दो-इलेक्ट्रॉन परमाणुओं की वर्णक्रमीय शब्द, L - S एवं j - j युग्मन, ऊर्जा स्तरों की बहुलता, हीलियम परमाणु का वर्णक्रम, जीमन प्रभाव: प्रकार और प्रायोगिक व्यवस्था। 3. विभिन्न प्रकार के आण्विक वर्णक्रम, द्विपरमाण्विक अणुओं का इलेक्ट्रॉनिक, घूर्णन तथा कांपनिक वर्णक्रम, रमन प्रभाव: प्रायोगिक व्यवस्था एवं क्वांटम सिद्धांत द्वारा व्याख्या, एक्स किरणों का उत्पादन, सतत एवं अभिलाक्षणिक एक्स किरण वर्णक्रम, मोसले का नियम। सार बिंदु (की वर्ड)/टैग: अपवर्जन नियम, बोसॉन एवं फर्मिऑन, चक्रण - कक्षा परस्पर क्रिया, आण्विक वर्णक्रम, एक्स किरणें।	
IV	ठोस अवस्था भौतिकी 1. क्रिस्टलीय एवं अक्रिस्टलीय ठोस, आकाश जालक, आधार, जालक स्थानांतर सदिश, प्रिमिटिव कोष्टिका, ब्रैवैस जालक, सात क्रिस्टलीय निकाय, सममिति, मिलर सूचकांक, अंतर तलों के बीच दूरी। 2. क्रिस्टलीय संरचनाएँ: सरल घनीय, फलक केन्द्रित घनीय (NaCl), अन्तः केन्द्रित घनीय (CsCl), षटकोणीय निविड़ संकुलन, हीरा संरचना, समन्वय संख्या एवं परमाणिक संकुलन अनुपात, लाउ एवं ब्रैग के समीकरण, व्युत्क्रम जालक। 3. विशिष्ट ऊष्मा का डुलोंग एवं पेटिट का सिद्धांत, विशिष्ट ऊष्मा का आइंस्टीन का सिध्दांत, विशिष्ट ऊष्मा का डिबाई का सिध्दांत, क्रिस्टल में जालक कंपन: एकल - परमाण्विक जालक कंपन एवं विक्षेपण संबंध, ब्रिलॉइन जोन, फोनोन की अवधारणा, लॉरेंज ड्रूड सिद्धांत, ओम का नियम ($J = \sigma E$), वाइडमैन फ्रैंज नियम; हॉल प्रभाव। सार बिंदु (की वर्ड)/टैग: क्रिस्टलीय ठोस, प्रिमिटिव कोष्टिका, क्रिस्टलीय संरचना, व्युत्क्रम जालक, ब्रिलॉइन जोन।	12

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V	अर्धचालक एवं युक्तियाँ 1. ठोसों में ऊर्जा बैण्ड, आंतर एवं बाह्य अर्धचालक, फर्मी ऊर्जा स्तर, गतिशीलता, अर्धचालकों की चालकता, अर्धचालकों में इलेक्ट्रॉनों एवं विवर की सांद्रता, 2. P-N सन्धि, अवक्षत परत, विभव प्राचीर, शॉकले डायोड समीकरण (व्युत्पत्ति के बिना), जेनर- डायोड एवं इसके अनुप्रयोग, फोटोडायोड, प्रकाश उत्सर्जक डायोड एवं सौर सेल का प्रारंभिक ज्ञान, द्विध्रुवीय सन्धि ट्रांजिस्टर एवं इनके अभिलाक्षणिक वक्र, धारा लाभ (α, β एवं γ), क्षेत्र प्रभाव ट्रांजिस्टर। 3. प्रवर्धक एवं उनका वर्गीकरण, एकल स्तरीय उभयनिष्ठ उत्सर्जक प्रवर्धक, Q -विंदु, लोड लाइन एवं आवृत्ति अनुक्रिया वक्र, पुनर्निवेशन प्रवर्धक, बार्कहाउजेन कसौटी, कला विस्थापी एवं वीन सेतु दोलित्र। **सार बिंदु (की वर्ड)/टैग:** अर्धचालक, P-N सन्धि, प्रवर्धक, दोलित्र।	12

भाग स- अनुशंसित अध्ययन संसाधन

पाठ्य पुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन

अनुशंसित सहायक पुस्तकें /ग्रन्थ/अन्य पाठ्य संसाधन/पाठ्य सामग्री:

1. Beiser A., "Concept of Modern Physics", Mc Graw Hill.
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3. Mani H.S., Mehra G.K., "Introduction to Modern Physics", East West Press, 1989
4. Rajam J.B.,"Modern Physics", S. Chand.
5. Schiff L.I., "Quantum Mechanics", McGraw Hill Education, 4th edition, 2017.
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8. Kittel Charles, "Introduction to Solid State Physics", Wiley India Pvt. Ltd., India, (2007), 7th Edition.
9. Omar M. Ali, "Elementary Solid State Physics", Pearson Education, India, (2009), 6th Edition.
10. Singhal R. L., P. A. Alvi, et. Al., "Solid State Physics", Kedar Nath Ram Nath and Co., (2018),
11. Chattopadhyay D., Rakshit P.C., "Electronic Fundamentals and Application", New Age International, (2020).
12. Srivastava J. P., "Elements of Solid State Physics", Prentice Hall of India, 2011, 3rd edition.
13. Ashcroft Neil W., Mermin N. David., "Solid State Physics" Harcourt College Publishing, New York, 2019.
14. Gupta S. L., Kumar V., "A Hand Book of Electronics", Pragati Prakashan, India, 2013, 19th Edition.
15. Malvino Albert Paul, Bates David, "Electronic Principles", McGraw Hill International Edition, India, (2006), 7th Edition.
16. मध्य प्रदेश हिंदी ग्रंथ अकादमी, भोपाल द्वारा प्रकाशित पुस्तकें

अनुशंसित वेब लिंक:

1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.).
2. https://youtu.be/KSgzRxzhzrQ?list=PLCvpYrhOPdiX6-GqRU3eVMKScNP4jedGi Modern Physics by Prof. V. Ravishankar, IIT Delhi.
3. https://youtu.be/THZNfDdt_w0?list=PL8g67naApM8hmh2mw19NX4fP1663Hc9jt Quantum physics by H. C. Verma, IIT Kanpur
4. https://youtu.be/xlrvgLUsKqU?list=RDCMUCLI5l1QwKqQn0Cf4nzdGKeQ Quantum Mechanics by Prof. P. Ramadevi, IIT Bombay.

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5. https://youtu.be/RJOCEz7wd0?list=PLbMVogVj5nJQ5jqiXDYuE6ETz5F5Kn4dA Structure of Materials by Prof. Sandeep Sangal & Dr. Anandh Subramaniam, IIT Kanpur.
6. https://youtu.be/L-eOdZFt9BY Condensed Matter Physics by Prof. G. Rangarajan, Department of Physics, IIT Madras.
7. https://youtu.be/Kp-jS6NHsB8?list=PLF178600D851B098F Lecture Series on Solid State Devices by Dr. S. Karmalkar, IIT Madras.
8. https://youtu.be/g7vYop_46tU?list=PL708EEA8184EA8F53 Electronics by Prof. D.C. Dube, Department of Physics, IIT Delhi.

भाग द - अनुशंसित मूल्यांकन विधियां:

अनुशंसित सतत मूल्यांकन विधियां:

अधिकतम अंक: 100

सतत व्यापक मूल्यांकन (CCE) : 30 अंक

विश्वविद्यालयीन परीक्षा (UE) : 70 अंक

आंतरिक मूल्यांकन: सतत व्यापक मूल्यांकन (CCE)	क्लास टेस्ट / असाइनमेंट / प्रेजेंटेशन	30 अंक
बाह्य मूल्यांकन: विश्वविद्यालयीन परीक्षा समय : 03:00 घंटे	खंड अ : अति लघु उत्तरीय प्रश्न खंड ब : लघु उत्तरीय प्रश्न खंड स : दीर्घ उत्तरीय प्रश्न	70 अंक

कोई टिप्पणी/सुझाव:

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भाग अ- परिचय			
कार्यक्रम: डिग्री	कक्षा: बी. एससी.	वर्ष: III	सत्र: 2023-2024
विषय: भौतिकशास्त्र			

1.	पाठ्यक्रम का कोड	S3-PHYS2P	
2.	पाठ्यक्रम का शीर्षक	क्वांटम यांत्रिकी, ठोस अवस्था भौतिकी एवं युक्तियाँ प्रयोगशाला (प्रायोगिक)	
3.	पाठ्यक्रम का प्रकार :(कोर कोर्स/ डिसिप्लिन स्पेसिफिक इलेक्टिव/जेनेरिक इलेक्टिव/वोकेशनल/.....)	माइनर/इलेक्टिव	
4.	पूर्वापेक्षा (Prerequisite) (यदि कोई हो)	इस कोर्स का अध्ययन करने के लिए छात्र के पास डिप्लोमा में भौतिक शास्त्र एक विषय के रूप में होना चाहिए।	
5.	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) (CLO)	पाठ्यक्रम पूरा होने पर, छात्र सक्षम होंगे 1. विभिन्न विधियों का उपयोग कर प्लांक नियतांक एवं रिडबर्ग नियतांक का निर्धारण करने में। 2. इलेक्ट्रॉन का विशिष्ट आवेश एवं इलेक्ट्रॉनिक आवेश के निर्धारण करने में। 3. फ्रेंक हट्र्ज प्रयोग के उपयोग से गैस (आर्गन) का प्रथम उत्तेजित विभव निर्धारण करने में। 4. नियत विचलन वर्णक्रममापी एवं फ़ेब्री पैरो व्यतिकरणमापी आदि उपकरण का उपयोग करने में। 5. ठोस अवस्था भौतिकी एवं इलेक्ट्रॉनिक उपकरणों के बारे में व्यावहारिक ज्ञान विकसित करने में। 6. विभिन्न डायोड एवं ट्रांजिस्टर के अभिलक्षणिक वक्रों को बनाने में। 7. प्रवर्धकों एवं दौलित्रों के कार्य सिद्धांत को समझने में।	
6.	क्रेडिट	2	
7.	कुल अंक	अधिकतम अंक: 100	न्यूनतम उत्तीर्ण अंक: 35

भाग ब - पाठ्यक्रम की विषयवस्तु		
व्याख्यान की कुल संख्या - प्रायोगिक (प्रति सप्ताह घंटों): 2		
क्रम संख्या	प्रयोगों की सूची	व्याख्यानों की संख्या (2 घंटे/ व्याख्यान)

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1.	हाइड्रोजन विसर्जन नलिका का उपयोग कर रिडबर्ग नियतांक का निर्धारण करना।	30
2.	प्रकाश उत्सर्जक डायोड का उपयोग कर प्लांक नियतांक का निर्धारण करना।	
3.	थामसन विधि द्वारा विशिष्ट आवेश e/m का निर्धारण करना।	
4.	फोटो सेल के उपयोग से प्लांक नियतांक का निर्धारण करना।	
5.	फ्रेंक हर्ट्ज प्रयोग की सहायता से गैस (आर्गन) का प्रथम उत्तेजित विभव का निर्धारण करना।	
6.	फ़ेब्री पैरो इटेलान की सहायता से ग्रीन मरकरी रेखा का सामान्य अनुप्रस्थ एवं अनुदैर्ध्य अभिविन्यास के लिये ज़ीमन विभक्ति का प्रेक्षण करना।	
7.	नियत विचलन स्पेक्ट्रोग्राफ की सहायता से मरकरी स्रोत वर्णक्रम की तरंगदैर्ध्य का मापन करना एवं उसके ड्रम का अंशांकन करना।	
8.	मिलिकन तेल बूंद सहायता से इलेक्ट्रॉनिक आवेश का निर्धारण करना ।	
9.	आयोडीन वाष्प के अवशोषण वर्णक्रम का अध्ययन करना।	
10.	फोटो सेल की अभिलाक्षणिक वक्र को खींचना (बनाना) एवं स्टार्पिंग विभव का निर्धारण करना।	
11.	PN संधि डायोड के अभिलाक्षणिक वक्र का अध्ययन करना।	
12.	जेनर डायोड के अभिलाक्षणिक वक्र का अध्ययन करना।	
13.	प्रकाश उत्सर्जक डायोड के अभिलाक्षणिक वक्र का अध्ययन करना।	
14.	PN संधि डायोड पश्च अभिनति में उपयोग कर अर्द्धचालक की ऊर्जा बैण्ड अन्तराल ज्ञात करना।	
15.	उभयनिष्ठ उत्सर्जक विधा में PNP/NPN ट्रांजिस्टर के अभिलाक्षणिक वक्र खींचना एवं धारा – लाभ का मान ज्ञात करना।	
16.	संधि – क्षेत्र प्रभाव ट्रांजिस्टर (JFET) के अभिलाक्षणिक वक्र खींचना।	
17.	एकल – स्तर आरसी प्रवर्धक का अध्ययन करना।	
18.	वीन – सेतु दोलित्र का अध्ययन करना।	
19.	फोटो डायोड के अभिलाक्षणिक वक्र का अध्ययन करना।	
20.	सौर सेल के अभिलाक्षणिक वक्र का अध्ययन करना।	
भाग स- अनुशंसित अध्ययन संसाधन		
पाठ्य पुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन		
अनुशंसित सहायक पुस्तकें /ग्रन्थ/अन्य पाठ्य संसाधन/पाठ्य सामग्री:		

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1. Prakash I. & Ramakrishna, "A Text Book of Practical Physics", Kitab Mahal, 2011,11/e.
2. Squires G. L., "Practical Physics", Cambridge University Press, 2015, 4/e.
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5. Chattopadhyay D., Rakshit P.C. and Saha B., "An Advanced Course in Practical Physics", New Central Book Agency P. Ltd.
6. Singh S.P., "Advanced Practical Physics", Pragati Prakashan.
7. Tayal D. C., "University Practical Physics", Himalaya Publishing House
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9. Srivastava Anchal, Shukla R. K., " Practical Physics", New Age International Publishers.
10. Agarwal D. C., "Experimental electronics", Technical Publishing House.
11. Srivastava J. P., " Elements of Solid state Physics", PHI Publication.
12. मध्य प्रदेश हिंदी ग्रंथ अकादमी, भोपाल द्वारा प्रकाशित पुस्तकें।

अनुशंसित वेब लिंक

1. https://www.eshiksha.mp.gov.in/mpdhe/ Learning Management System, Department of higher education, Government of Madhya Pradesh (M.P.).
2. https://www.vlab.co.in/broad-area-physical-sciences
3. https://storage.googleapis.com/uniquecourses/online.html
4. https://www.vlab.co.in/broad-area-physical-sciences
5. https://storage.googleapis.com/uniquecourses/online.html

भाग द - अनुशंसित मूल्यांकन विधियां:

04/11/2022

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अनुशंसित सतत मूल्यांकन विधियां :

आतंरिक मूल्यांकन	अंक	बाह्य मूल्यांकन	अंक
कक्षा में संवाद / प्रश्नोत्तरी	30	प्रायोगिक मौखिकी (वायवा)	70
उपस्थिति		प्रायोगिक रिकॉर्ड फाइल	
असाइनमेंट (चार्ट/मॉडल/सेमिनार/ग्रामीण सेवा/प्रौद्योगिकी प्रसार/भ्रमण(एकस्कर्शन) की रिपोर्ट/ सर्वेक्षण/प्रयोगशाला भ्रमण (लैब विजिट)/ औद्योगिक यात्रा		टेबल वर्क/ प्रयोग	
	कुल अंक : 100		

कोई टिप्पणी/सुझाव:

04/11/2022
(Sadhna Singh

FC-III ENGLISH

PART A: Introduction

Program: UG Level (Degree)	Class: III Year	Year: 2023-24	Session: 2023-24 onwards

Subject: Foundation Course (English)

1.	**Course Code**	X3-FCHB1T	
2.	**Course Title**	English Language and Communication Skills	
3.	**Course Type (Core Course/Elective/Generic Elective/ Vocational**	Foundation Course	
4.	**Pre-Requisite (if any)**	To study this course, a student should have basic knowledge of English language. This course will be studied by all the students of UG Final year under the Foundation Course category.	
5.	**Course Learning Outcomes (CLO)**	Through this course the students will be able to: 1. prepare for various competitive exams by developing their competence in English language. 2. promote their comprehension and communicative skills by being exposed to a variety of texts and their interpretations. 3. build and enhance their language competence through regular practice. 4. develop their knowledge of English Grammar and usages in a practical manner. 5. compete in national and state level examinations for various competitions after the completion of the course. 6. seek a good job and to settle down in self-employment or their own business or profession.	
6.	**Credit Value**	2 Credit	
7.	**Total Marks**	**Max. Marks : 50**	**Min. Pass Marks: 17**

PART B: Content of the Course		
Total No. of Lectures-Tutorials-Practical (in hours – 30)		
Total No. of Lectures: 30		
Unit	**Topics**	**No. of Lectures**
I	**Reading, Writing and Interpretation Skills: (Text-Based)** **1. The Express -Stephen Spender** **2. The World is Too Much with Us-William Wordsworth** **3. My Financial Career -Stephen Leacock** **4. Running for Governor-Mark Twain**	10
II	**Essay writing -Topical essays:** Terrorism, Covid -19 Pandemic, India and the Modern World, The Role of Women in the New Era, The Global World.	10
III	**(a) Communicative Skills:** Words often Confused, Misused, Idiomatic Expressions and Proverbs, etc. **(b) Essential Conversations:** Introducing Yourself, Introducing Other Persons, Meeting Someone First Time, At the Airport, Ordering Food in a Restaurant, Talking about a Movie, etc. **(c)** Filing an F.I.R., Writing a Resume, E-mail Writing, Blog Writing on a given topic. **Key Words:** Manifesto, Self- Possession, Streamline, Rage, Meteors, Fierce, Perjury, Intent, Campaign, Malicious, English Communication, Competence, Soft Skills, Practical Knowledge, Resume, CV, Blog, Blog Writer and E-mails.	10

PART C: Learning Resources

Textbooks, Reference Books, Other Resources

Suggested Readings and Web Materials:

1- Essential English Grammar – Raymond Murphy, Cambridge University Press.
2- Practical English Grammar Exercises 1- A. J. Thomson & A. V. Martinet, Oxford India.
3- Practical English Usage - Michael Swan, Oxford
4- English Grammar in Use – Raymond Murphy, Cambridge University Press.
5- Essays for UPSC Exams New Delhi.
6- A Practical Course in Spoken English- J K Gangal, PHI, New Delhi Publications.
7- Speak and Write Effectively- PDF materials on the web-NET
8- www.englishclub.com
9- www.eslfast.com
10- Swayam Portal

Part D: Assessment and Evaluation			
Max Marks: 50	**Min. Marks: 17**	**University Exam (UE)**	**Total:50**
U.E. Time 2 Hours			

	External Assessment (UE)	Time: 2 Hours	Marks
1.	Multiple Choice type questions	50 × 1	50

1-11-22

Dr. A S Kushwah

(Professor of English)

Forwarded
BR 11.22

Part A Introduction			
Program: Degree	**Class: B.A./B.Sc./B.Com./B.H.Sc./BCA**	**Year: III Year**	**Session: 2023-24**
Subject: Foundation Course			

1.	**Course Code**	**X3-FCBD1T**	
2.	**Course Title**	**Digital Awareness - Cyber Security**	
3.	**Course Type**	**Ability Enhancement Compulsory Course**	
4.	**Pre-requisite (if any)**	**Compulsory for all Third Year students**	
5.	**Course Learning outcomes (CLO)**	**After completing the course, student will be able to :** ● Make optimum use of web browsers, search engines and Chatbots ● Creating e-mail account, sending, receiving and managing emails. ● Describe reporting procedure of phishing emails. ● Identify email phishing attack and preventive measures. ● Configure security settings in Mobile Wallets and UPIs. ● Practice safe, legal and ethical means of using Information Technology. ● Practice and use the various online financial and government services of day-to-day use. ● Understand the basic concepts related to E-Commerce and digital payments. ● Discuss cyber security aspects, RBI guidelines and preventive measures against digital payment frauds. ● Explore and learn the online available courses of his/her interest. ● Use the Digilocker and Academic Bank of Credit. ● Describe the concept of Cyber security and issues and challenges associated with it. . ● Explain the process of reporting cyber crime at Cyber crime Police Station/ at online platform. ● Appreciate various privacy and security concerns on online Social media. ● Guide through the reporting procedure of inappropriate content. ● Perform privacy and security settings for popular Social media platforms.	
6.	**Credit Value**	**2**	
7.	**Total Marks**	**Max. Marks: 50**	**Min. Marks:**

Part B – Content of the Course		
	Total No. of Lectures 30 (01 hour per week)	
Unit	**Topics**	**No. of Lectures**
I	Overview of Computer and Web-technology, Architecture of cyberspace, World wide web, Advent of internet, Internet infrastructure for data transfer and governance, Internet society. **Use of Internet:** Web browsers, search engines and Chatbots. Difference between Website & Portal, E-mail: Account opening, sending & receiving e-mails, managing Contacts & Folders. **Computer Security**: Issues & protection, firewall & antivirus, making secure online transactions. Internet safety and digital security. Ethical use of digital resources, Measures of Online Self Protection. **Keywords**: ***Browser, Search Engine, Website, Virus, Security, Firewall, Cyber Ethics.***	**05**
II	**Digital Payments and e-Commerce:** Internet Banking: National Electronic Fund Transfer (NEFT), Real Time Gross Settlement (RTGS), Immediate Payment Service (IMPS) Digital Financial Tools: Understanding OTP [One Time Password], QR [Quick Response] Code, UPI [Unified Payment Interface], AEPS [Aadhaar Enabled Payment System]; USSD [Unstructured Supplementary Service Data], Card [Credit / Debit], eWallet, PoS [Point of Sale] **Definition of E-Commerce**- Main components of E-Commerce, Elements of E-Commerce security, E-Commerce threats, E-Commerce security best practices, Online Bill Payment. Digital payments related common frauds and preventive measures. RBI guidelines and provisions of Payment Settlement Act, 2007. **Keywords:Inetrnet Banking, Digital Financial Tools, eWallet, e-Commerce Security.**	**07**
III	**e-Governance Service-** Overview of e-Governance Services like Railway Reservation, passport, eHospital; Accessing various e-Governance Services on Mobile Using "UMANG APP". Exploring services and resources of Government of India Portal (https://www.mygov.in/). Digi-Locker: About digilocker, features and benefits of digilocker, Registering, accessing and getting various certificates and mark sheets on digilocker. Academic Bank of Credit (ABC): About ABC, features and benefits of ABC, Registering, accessing, getting and sharing academic credits. Exploring Online Learning resources: Online learning through SWAYAM Central, (https://swayam.gov.in/) and e-pathshala (https://epathshala.nic.in/). **Keywords:** ***Internet Banking, NEFT, RTGS, IMPS, OTP, UPI, QR Code, AEPS, E-Governance, Umang.***	**06**

IV	**Introduction to Cyber security-** Regulation of cyberspace, Concept of cyber security, Issues and challenges of cyber security. Definition of cyber crimes and offences, Cyber crime targeting computers and mobiles, Cyber crime against women and children, Cyber bullying. Financial frauds, Social engineering attacks, Malware and Ransomware attacks, zero day and zero click attacks. Cyber criminals modus-operandi, Reporting of cyber crimes, Remedial and mitigation measures, Legal perspective of cyber crime, IT Act 2000 and its amendments, Organisations dealing with Cyber crime and Cyber security in India, Case studies. **Keywords: Cyber Space, Cyber Security, Cyber Offences, Zero Click Attack, Zero Day Attack, Ransomware, Reporting Cyber Crimes, Cyber Crimes Case Studies.**	**05**
V	**Social Media Overview and Security-** Introduction to Social Networks, Types of Social media, Social media platforms, Social media monitoring, Hashtag, Viral content, Social media marketing, Social media privacy, Challenges, opportunities and pitfalls in online social network, Security issues related to social media, Flagging and reporting of inappropriate content, Laws regarding posting of inappropriate content, Best practices for the use of Social media, Case studies. **Keywords: Social Media Platforms, Hashtagging, Social Media Marketing, flagging of contents in social media.**	**06**

Part C-Learning Resources

Text Books, Reference Books, Other resources

Suggested Readings:

- Praveen Kumar Shukla, Surya Prakash Tripathi, Ritendra Goel "Introduction to Information Security and Cyber Laws" Dreamtech Press.
- Vivek Sood, "Cyber law simplified", Tata McGrawHill, Education (India).
- T. Bradley "Essential Computer Security: Everyone's Guide to Email, Internet, and Wireless Security".
- Cyber Crime Impact in the New Millennium, by R. C Mishra , Auther Press. Edition 2010.
- Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
- Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson , 13th November, 2001)
- Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
- Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.
- Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
- Fundamentals of Network Security by E. Maiwald, McGraw Hill

Reference Books:

- M. Stamp, "Information Security: Principles and Practice", Wiley.
- David J. Loundy, "Computer Crime, Information Warfare, And Economic Espionage", Carolina Academic Press.

Suggested equivalent online courses: e-reading:

- **http://egyankosh.ac.in//handle/123456789/9489**
- **https://workspace.google.com/intl/en_in/training/**
- **https://www.classcentral.com/course/openlearn-science-maths-technology-preparing-your-96104**
- **https://www.udemy.com/course/free-computer-literacy-101-course/**
- **https://www.mygov.in/**
- https://epathshala.nic.in/
- https://www.digilocker.gov.in/
- https://www.abc.gov.in/
- https://swayam.gov.in/

PART D: Assessment and Evaluation

Suggested Evaluation Methods:
Maximum Marks: 50
University Exam (UE): 50 Marks

External Assessment: University Exam (UE): Time : **01.00 Hours**	50 Objective type questions	50 **Marks**

Any remarks/suggestions:

भाग अ - परिचय				
कार्यक्रम: उपाधि	कक्षा: बी.ए.एससी.बी/.कॉम.बी/.एससी.एच.बी/./बी.सी.ए.		वर्ष:तृतीय	सत्र: 2023-24
विषय: **आधार पाठ्यक्रम**				
1	पाठ्यक्रम का कोड	**X3-FCBD1T**		
2	पाठ्यक्रम का शीर्षक	डिजिटल जागरूकता -साइबर सुरक्षा		
3	पाठ्यक्रम का प्रकार	योग्यता संवर्धन अनिवार्य पाठ्यक्रम		
4	पूर्वापेक्षा (Prerequisite) (यदि कोई हो)	तृतीय वर्ष के सभी विद्यार्थियों के लिए अनिवार्य		
5	पाठ्यक्रम अध्ययन की परिलब्धियां (कोर्स लर्निंग आउटकम) **(CLO)**	**इस पाठ्यक्रम के सफल समापन पर, विद्यार्थी निम्न में सक्षम होंगे:** ● वेब ब्राउज़र, सर्च इंजन और चैटबॉट्स का उपयोग । ● ई-मेल खाता बनाना, ईमेल भेजना, प्राप्त करना और प्रबंधन । ● फ़िशिंग ईमेल की रिपोर्टिंग की प्रक्रिया का वर्णन । ● ईमेल फ़िशिंग अटैक और निवारक उपायों की पहचान । ● मोबाइल वॉलेट और UPI में सुरक्षा सेटिंग्स कॉन्फ़िगर करना । ● सूचना प्रौद्योगिकी का उपयोग करने के सुरक्षित, कानूनी और नैतिक मानकों के साथ प्रयोग । ● दैनिक उपयोग की विभिन्न ऑनलाइन वित्तीय और सरकारी सेवाओं का उपयोग । ● ई-कॉमर्स व डिजिटल भुगतान संबंधी बुनियादी अवधारणाओं की समझ । ● साइबर सुरक्षा पहलुओं, आरबीआई के दिशानिर्देशों और डिजिटल भुगतान में धोखाधड़ी के निवारक उपाय । ● उसकी रुचि के ऑनलाइन उपलब्ध पाठ्यक्रमों को एक्सप्लोर करना । ● डिजिलॉकर और अकादमिक बैंक ऑफ क्रेडिट का उपयोग । ● साइबर सुरक्षा की अवधारणा और इससे जुड़े मुद्दों और चुनौतियां । ● साइबर अपराध पुलिस स्टेशन/ऑनलाइन प्लेटफॉर्म पर साइबर अपराध की रिपोर्ट करने की प्रक्रिया । ● ऑनलाइन सोशल मीडिया पर विभिन्न गोपनीयता और सुरक्षा । ● अनुपयुक्त सामग्री की रिपोर्टिंग प्रक्रिया । ● लोकप्रिय सोशल मीडिया प्लेटफॉर्म के लिए गोपनीयता और सुरक्षा सेटिंग।		
6	क्रेडिट मान	**2**		
7	कुल अंक	अधिकतम अंक: 50	न्यूनतम उत्तीर्ण अंक:	

भाग ब- पाठ्यक्रम की विषयवस्तु		
कुल व्याख्यान संख्या- 30 (प्रति सप्ताह 01 घंटा)		
इकाई	**विषय**	**व्याख्यान संख्या** (1 **घंटा/ व्याख्यान**)
I	कंप्यूटर और वेब-प्रौद्योगिकी का अवलोकन, साइबरस्पेस का आर्किटेक्चर, वर्ल्ड वाइड वेब, इंटरनेट का आगमन, डेटा ट्रांसफर और गवर्नेंस के लिए इंटरनेट इंफ्रास्ट्रक्चर, इंटरनेट समाज। **इंटरनेट का उपयोग:** वेब ब्राउज़र, सर्च इंजन और चैटबॉट्स। वेबसाइट और पोर्टल, ई-मेल के बीच अंतर, ई-मेल खाता खोलना, ई-मेल भेजना और प्राप्त करना, कॉन्टेक्ट्स और फ़ोल्डर का प्रबंधन। **कंप्यूटर सुरक्षा:** मुद्दे और सुरक्षा, फ़ायरवॉल और एंटीवायरस, सुरक्षित ऑनलाइन लेनदेन करना। इंटरनेट सुरक्षा और डिजिटल सुरक्षा। डिजिटल संसाधनों का नैतिक उपयोग, ऑनलाइन आत्म सुरक्षा के उपाय। **Keywords**: ***Browser, Search Engine, Website, Virus, Security, Firewall, Cyber Ethics.***	**05**
II	**डिजिटल भुगतान और ई-कॉमर्स:** इंटरनेट बैंकिंग: नेशनल इलेक्ट्रॉनिक फंड ट्रांसफर (एनईएफटी), रीयल टाइम ग्रॉस सेटलमेंट (आरटीजीएस), तत्काल भुगतान सेवा (आईएमपीएस) डिजिटल वित्तीय उपकरण: ओटीपी [वन टाइम पासवर्ड], क्यूआर [क्विक रिस्पांस] कोड, यूपीआई [यूनिफाइड पेमेंट इंटरफेस], एईपीएस [आधार सक्षम भुगतान प्रणाली] को समझना; **USSD** [अनस्ट्रक्चर्ड सप्लीमेंट्री सर्विस डेटा], कार्ड [क्रेडिट/डेबिट], ई-वॉलेट, **PoS** [प्वाइंट ऑफ सेल] **ई-कॉमर्स की परिभाषा-** ई-कॉमर्स के मुख्य घटक, ई-कॉमर्स सुरक्षा के तत्व, ई-कॉमर्स सम्बन्धी खतरे, ई-कॉमर्स सुरक्षा सर्वोत्तम प्रथाएं, ऑनलाइन बिल भुगतान। डिजिटल भुगतान से संबंधित आम धोखाधड़ी और निवारक उपाय। आरबीआई के दिशानिर्देश और भुगतान निपटान अधिनियम, 2007 के प्रावधान। **Keywords:Inetrnet Banking, Digital Financial Tools, eWallet, e-Commerce Security.**	**08**
III	**ई-गवर्नेंस सर्विस-** रेलवे आरक्षण, पासपोर्ट, ई-अस्पताल जैसी ई-गवर्नेंस सेवाओं का अवलोकन; "उमंग ऐप" का उपयोग करके मोबाइल पर विभिन्न ई-गवर्नेंस सेवाओं तक पहुंचना। भारत सरकार के पोर्टल (https://www.mygov.in/) की सेवाओं और संसाधनों की खोज करना। **डिजी-लॉकर:** डिजिलॉकर के बारे में, डिजिलॉकर की विशेषताएं और लाभ, डिजीलॉकर पर विभिन्न प्रमाणपत्रों और मार्कशीट को पंजीकृत करना, एक्सेस करना और प्राप्त करना। **अकादमिक बैंक ऑफ क्रेडिट (एबीसी):** एबीसी का विवरण, एबीसी की विशेषताएं और लाभ, पंजीकरण, पहुंच, अकादमिक क्रेडिट प्राप्त करना और साझा करना।	**06**

	ऑनलाइन शिक्षण संसाधनों की खोज: SWAYAM Central (https://swayam.gov.in/) और ई-पाठशाला (https://epathshala.nic.in/) के माध्यम से ऑनलाइन शिक्षण। **Keywords:** ***Internet Banking, NEFT, RTGS, IMPS, OTP, UPI, QR Code, AEPS, E-Governance, Umang.***	
IV	**साइबर सुरक्षा का परिचय-** साइबरस्पेस का विनियमन, साइबर सुरक्षा की अवधारणा, साइबर सुरक्षा के मुद्दे और चुनौतियाँ। साइबर अपराध और उल्लंघनों की परिभाषा, कंप्यूटर और मोबाइल को लक्षित साइबर अपराध, महिलाओं और बच्चों के खिलाफ साइबर अपराध, साइबर बुलिंग। वित्तीय धोखाधड़ी, सोशल इंजीनियरिंग हमले, मैलवेयर और रैंसमवेयर हमले, जीरो डे और जीरो क्लिक अटैक। साइबर अपराधियों की कार्यप्रणाली-, साइबर अपराधों की रिपोर्टिंग, उपचारात्मक और शमन उपाय, साइबर अपराध का कानूनी परिप्रेक्ष्य, आईटी अधिनियम 2000 और इसके संशोधन, भारत में साइबर अपराध और साइबर सुरक्षा से निपटने वाले संगठन, केस स्टडी। **Keywords: Cyber Space, Cyber Security, Cyber Offences, Zero Click Attack, Zero Day Attack, Ransomware, Reporting Cyber Crimes, Cyber Crimes Case Studies.**	**05**
V	**सोशल मीडिया अवलोकन और सुरक्षा-** सोशल नेटवर्क का परिचय, सोशल मीडिया के प्रकार, सोशल मीडिया प्लेटफॉर्म, सोशल मीडिया मॉनिटरिंग, हैशटैग, वायरल कंटेंट, सोशल मीडिया मार्केटिंग, सोशल मीडिया प्राइवेसी, ऑनलाइन सोशल नेटवर्क में चुनौतियां, अवसर और नुकसान, सोशल मीडिया से संबंधित सुरक्षा मुद्दे, फ्लैगिंग और अनुपयुक्त सामग्री की रिपोर्टिंग, अनुपयुक्त सामग्री पोस्ट करने के संबंध में कानून, सोशल मीडिया के उपयोग के लिए प्रथाएं, केस स्टडी। **Keywords: Social Media Platforms, Hashtagging, Social Media Marketing, flagging of contents in social media.**	**06**

भाग स-अनुशंसित अध्ययन संसाधन

पाठ्य पुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन

अनुशंसित सहायक पुस्तकें /ग्रन्थ/अन्य पाठ्य संसाधन/पाठ्य सामग्री:

Suggested Readings:

- Praveen Kumar Shukla, Surya Prakash Tripathi, Ritendra Goel "Introduction to Information Security and Cyber Laws" Dreamtech Press.
- Vivek Sood, "Cyber law simplified", Tata McGrawHill, Education (India).
- T. Bradley "Essential Computer Security: Everyone's Guide to Email, Internet, and Wireless Security".
- Cyber Crime Impact in the New Millennium, by R. C Mishra , Auther Press. Edition 2010.
- Cyber Security Understanding Cyber Crimes, Computer Forensics and Legal Perspectives by Sumit Belapure and Nina Godbole, Wiley India Pvt. Ltd. (First Edition, 2011)
- Security in the Digital Age: Social Media Security Threats and Vulnerabilities by Henry A. Oliver, Create Space Independent Publishing Platform. (Pearson , 13th November, 2001)
- Electronic Commerce by Elias M. Awad, Prentice Hall of India Pvt Ltd.
- Cyber Laws: Intellectual Property & E-Commerce Security by Kumar K, Dominant Publishers.

- Network Security Bible, Eric Cole, Ronald Krutz, James W. Conley, 2nd Edition, Wiley India Pvt. Ltd.
- Fundamentals of Network Security by E. Maiwald, McGraw Hill

Reference Books:

- M. Stamp, "Information Security: Principles and Practice", Wiley.
- David J. Loundy, "Computer Crime, Information Warfare, And Economic Espionage", Carolina Academic Press.

अनुशंसित समकक्ष ऑनलाइन पाठ्यक्रम:
Suggested equivalent online courses: e-reading:

- **http://egyankosh.ac.in//handle/123456789/9489**
- **https://workspace.google.com/intl/en_in/training/**
- **https://www.classcentral.com/course/openlearn-science-maths-technology-preparing-your-96104**
- **https://www.udemy.com/course/free-computer-literacy-101-course/**
- **https://www.mygov.in/**
- https://epathshala.nic.in/
- https://www.digilocker.gov.in/
- https://www.abc.gov.in/
- https://swayam.gov.in/

भाग द - अनुशंसित मूल्यांकन विधियां:

अनुशंसितसतत मूल्यांकन विधियां:
अधिकतम अंक: 50
विश्वविद्यालयीनपरीक्षा (UE) अंक:50

आकलन : **विश्वविद्यालयीन परीक्षा:** समय- 01.00 घंटे	वस्तुनिष्ठ प्रश्न - 50	**50**

कोई टिप्पणी/सुझाव:

Part A- Introduction

Program: Degree	Class: B.A./ B.Sc./ B.Com.	Year - III	Session: 2023-24

Subject- Foundation Course

1	**Course Code**	**X3-FCAC1T**
2	**Course Title**	**Personality Development and Character Building**
3	**Course Type**	**Ability Enhancement Compulsory Course**
4	**Pre-requisite (if any)**	**Compulsory for all Students**
5	**Course Learning outcomes (CLO)**	1. Students will acquire the conceptual knowledge of Personality Development. 2. Students will develop insight into character building. 3. Students will be able to become global visionary citizens. 4. Students will be able to understand Indian knowledge tradition. 5. Students will be able to understand the difference between nature, culture and distortion. 6. This course will help in character building and overall development of personality of the students.
6	**Credit Value**	2

Part B- Content of the Course

Total No. of Lectures + Practical (in hours per week): **L-1 Hr / P-1 Lab Hr (=2 Hrs)**

Total No. of Lectures/ Practical: **L-30 /P-0 (30 Hrs)**

Unit	Topics	No. of lectures (Total 30)
1	• Personality development (Physical, mental, intellectual and spiritual development) meaning, concept, factors of personality development. • Character building (personal and national character): Meaning, concept, factors of character and means of character building. • Panchkosha, Annamaya Kosha, Pranamaya Kosha, Manomaya Kosha, Vigyanmaya Kosha and Anandamaya Kosha general introduction meaning purpose and importance. • Benefits of Panchkosh development and means of developing Panchkosh.	06 Theoretical 04 Experiential
2	• Physical and mental development • Meaning, concept of physical and mental development • Ideal daily routine, balanced diet, routine, subtle exercise • Ashtanga Yoga-Yama Niyam, Ishwar Pranidhan, self-study, contentment, patience, virtue, practice of discipline. • Past glory, social and citizenship awareness, equal respect to all sects and scientific outlook • Nation, Nationality, Democracy, Independence, Suraj, Vasudhaiva Kutumbakam, Coexistence.	06 Theoretical 04 Experiential

3	• Moral and mental development • Difference among happiness, joy and pleasure. • Ashtanga Yoga, Pranayama, Pratyahara, Dharana, Dhyana, Samadhi. • Continuity of Karmayoga, Bhaktiyoga, Jnanayoga in life according to one's own will • Indian time calculation. • Self-respect and contemplation of mother tongue and Indian knowledge tradition. • Biographies of Legends. • Practice of service, tolerance, charity, dedication and self-examination. Self reliance	06 Theoretical 04 Experiential

Part C- Learning Recourses

Text Books, Reference Book, Other resources

Suggested Readings:-

1- उच्च शिक्षा भारतीय दृष्टि- श्री अतुल कोठारी

2- अदम्य साहस - डॉ.ए.पी.जे. अब्दुल कलाम

3- व्यक्तित्व विकास - स्वामी विवेकानंद रामकृष्ण मिशन

4- आत्मतत्व का विस्तार - श्रुतम प्रकाशन जोधपुर

5- भारतीय मनोविज्ञान - श्री लज्जाराम तोमर

6- उपनिषद विशेषांक - गीता प्रेस गोरखपुर

7- भारतीय ज्ञान परम्परा वोध - हिंदी ग्रंथ अकादमी म.प्र.

Suggested digital platforms web links:-

21-04-2023
Prof. H.K. Nagaich

भाग – अ परिचय

कार्यक्रम– उपाधि	**Class:** B.A. / B.Sc./ B.Com.	वर्ष तृतीय वर्ष	स्त्र 2023–24

विषय– आधार पाठ्यक्रम

1	पाठ्यक्रम का कोड	**X3-FCAC1T**
2	पाठ्यक्रम का शीर्षक	व्यक्तित्व विकास और चरित्र निर्माण
3	पाठ्यक्रम का प्रकार	**योग्यता संवर्धन अनिवार्य पाठ्यक्रम**
4	पूर्वापेक्षा	**सभी विद्यार्थियों के लिए अनिवार्य**
5	पाठ्यक्रम अध्ययन की उपलब्धियॉ (कोर्स लर्निंग आउटकम)	1. विद्यार्थी व्यक्तित्व विकास का ज्ञान अर्जित करेगें। 2. विद्यार्थियों चरित्र निर्माण की अंतर्दृष्टि विकसित करेंगे । 3. विद्यार्थी वैश्विक दृष्टि प्राप्त नागरिक बन सकेंगे । 4. विद्यार्थी भारतीय ज्ञान परम्परा को समझने में सक्षम होंगे । 5. विद्यार्थी प्रकृति, संस्कृति और विकृति के अंतर को समझ सकेंगे । 6. यह पाठ्यक्रम विद्यार्थियों के चरित्र निर्माण और व्यक्तित्व के समग्र विकास में सहायक होगा।
6	क्रेडिटमान	2

भाग ब– पाठ्यक्रम की विषय वस्तु

व्याख्यान की कुल संख्या– ट्यूटोरियल–प्रायोगिक (प्रति सप्ताह घण्टे में)

इकाई	विषय	व्याख्यान की संख्या (30)
1	• व्यक्तित्व विकास (शारीरिक, मानसिक, बौद्धिक और आध्यात्मिक विकास) अर्थ, अवधारणा, व्यक्तित्व विकास के कारक तत्व। • चरित्र निर्माण (व्यक्तिगत एवं राष्ट्रीय चरित्र) अर्थ, अवधारणा, चरित्र के कारक तत्व तथा चरित्र निर्माण के साधन। • पंचकोष, अन्नमय कोष, प्राणमय कोष, मनोमय कोष, विज्ञानमय कोष एवं आनंदमय कोष सामान्य परिचय अर्थ उद्देश एवं महत्व। • पंचकोष विकास के लाभ तथा पंचकोष विकसित करने के साधन।	06 सैद्धांतिक 04 व्यावहारिक
2	• शारीरिक एवं मानसिक विकास • शारीरिक एवं मानसिक विकास के अर्थ, संकल्पना • आदर्श दिनचर्या, संतुलित आहार, ऋतुचर्या, सूक्ष्म व्यायाम • अष्टांग योग–यम नियम, ईश्वर प्राणिधान, स्वाध्याय, संतोष धैर्य, सदाचार, अनुशासन का अभ्यास। • अतीत गौरव, सामाजिक एवं नागरिकता बोध, सर्वपंथ समादर एवं वैज्ञानिक दृष्टिकोण • राष्ट्र, राष्ट्रीयता, लोकतंत्र, स्वाधीनता, सुराज, वसुधैव कुटुम्बकम, सह अस्तित्व।	06 सैद्धांतिक 04 व्यावहारिक

3	• नैतिक और आत्मिक विकास । • सुख, प्रसन्नता और आनंद में अंतर । • अष्टांग योग, प्राणायाम, प्रत्याहार, धारणा, ध्यान, समाधि । • कर्मयोग, भक्तियोग, ज्ञानयोग की जीवन में स्वेच्छानुसार निरंतरता • भारतीय काल गणना । • मातृभाषा और भारतीय ज्ञान परम्परा का स्वाभिमान और चिंतन । • महापुरूषों का जीवन चरित्र पठन । • सेवा, सहिष्णुता, परोपकार, समर्पण और आत्मपरीक्षण का अभ्यास, स्वाबलंबन ।	06 सैद्धांतिक 04 व्यावहारिक

भाग स – अनुशंसित अध्ययन संसाधन

पाठयपुस्तकें, संदर्भ पुस्तकें, अन्य संसाधन

अनुशंसित सहायक पुस्तकेः–

संदर्भ ग्रंथ सूची -

1- उच्च शिक्षा भारतीय दृष्टि- श्री अतुल कोठारी

2- अदम्य साहस - डॉ.ए.पी.जे. अब्दुल कलाम

3- व्यक्तित्व विकास - स्वामी विवेकानंद रामकृष्ण मिशन

4- आत्मतत्व का विस्तार - श्रुतम प्रकाशन जोधपुर

5- भारतीय मनोविज्ञान - श्री लज्जाराम तोमर

6- उपनिषद विशेषांक - गीता प्रेस गोरखपुर

7- भारतीय ज्ञान परम्परा वोध - हिंदी ग्रंथ अकादमी म.प्र.

अनुशंसित डिजिटल प्लेटफार्म बेव लिंकः

21-04-2023

Prof. N.K. Nagaich

आधार पाठ्यक्रम: प्रथम प्रश्न पत्र - हिंदी भाषा

(भाग - अ) परिचय				
	कार्यक्रम: यूजी लेवल डिग्री	कक्षा: बी.ए./ बी.कॉम./ बी.एससी./.बी.एच,एससी./बी.सी.ए. तृतीय वर्ष	वर्ष 2023	सत्र 2023-24
क्रमांक	विषय	आधार पाठ्यक्रम		
1	कोर्स कोड	X3- FCEA1T		
2	कोर्स का शीर्षक	भाषा और संस्कृति		
3	कोर्स का प्रकार	आधार पाठ्यक्रम		
4	कोर्स अपेक्षित	स्नातक द्वितीय वर्ष उत्तीर्ण किसी भी विषय समूह से		
5	कोर्स अधिगम उपलब्धि (लर्निंग आउटकम) **(CLO)**	1 इस पाठ्यक्रम के अध्ययन से विद्यार्थी हिंदी के प्रसिद्ध रचनाकार एवं उनकी रचनाओं से परिचित हो सकेंगे। 2 पठित रचनाओं के माध्यम से विद्यार्थी देश की सभ्यता एवं संस्कृति से परिचित हो सकेंगे। 3 पाठ्यक्रम के अध्ययन से विद्यार्थियों के व्यक्तित्व का बहुमुखी विकास होगा एवं रोजगार के अवसर उपलब्ध होंगे। 4 विशिष्ट शब्दावली (बीज शब्द / की वर्ड) से परिचित करवाते हुए बोध के स्तर को विकसित करना।		
6	क्रेडिट मान	02 क्रेडिट		
7	कुल अंक	50 अंक		
8	उत्तीर्ण अंक	17अंक		
9	समय	2 घंटा		

(भाग - ब) पाठ्यक्रम सामग्री

व्याख्यान की कुल संख्या : वर्ष में अधिकतम 15 घण्टे		
इकाई	**विषय**	**व्याख्यान घण्टा**
I	1 भवानी प्रसाद मिश्र : परिचय पाठ : सतपुड़ा के जंगल 2 उषा प्रियंवदा : परिचय पाठ : वापसी 3 विवेकानन्द : पाठ : शिकागो व्याख्यान	05
II	1 विद्यानिवास मिश्र : परिचय पाठ : आँगन का पंछी 2 महात्मा गाँधी : पाठ : आत्मकथा के अंश 3 विश्व के प्रमुख धर्म।	05
III	1 वाक्य रचना एवं अशुद्धि शोधन। 2 अनुवाद : अर्थ एवं प्रकार। 3 बीज शब्द (की वर्ड / अवधारणा मूलक शब्द) लोकतन्त्र, समरसता, कला, साहित्य, अध्यात्म	05

(भाग - स)

अनुशंसित अध्ययन संसाधन

	पाठ्यपुस्तकें, सन्दर्भ पुस्तकें, अन्य संसाधन
1	महात्मा गाँधी: सत्य के साथ मेरे प्रयोग, प्रभात प्रकाशन, नई दिल्ली
2	विश्व के प्रमुख धर्म : जी. आर. सिंह
3	वासुदेव नन्दन प्रसाद : आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, पटना, बिहार
4	हिन्दी ज्ञान कोष
5	उषा प्रियंवदा : वापसी
6	अनुशंसित डिजिटल प्लेटफार्म / वेब लिंक अनुशंसित समकक्ष ऑनलाईन पाठयक्रम 1 book.google.com>books 2 http://kavitakosh.org>भवानीप्रसाद मिश्र 3 भवानीप्रसाद मिश्र- Wikipedia 4 http://m.youtuve.com>watch 5 http://nibandhbharti.com>vidya-nivas-mishar 6 http://onlinefreenotes.com>वापसी 7 http://hi.m.wikipedia>wiki>उषा-प्रियंबदा 8 http://swayam.gov.in/

(भाग - द)

अनुशंसित मूल्यांकन पद्धति

	पाठ्यपुस्तकें, सन्दर्भ पुस्तकें, अन्य संसाधन
1	सतत् समग्र मूल्यांकन (CCE) नहीं होगा।
2	परीक्षा - ओ.एम.आर. शीट माध्यम से होगी।

अध्यक्ष
आधार पाठयक्रम
केन्द्रीय अध्ययन मण्डल भोपाल (म.प्र.)