GOVT. HOLKAR AUTONOMOUS SCIENCE COLLEGE INDORE
(CENTER FOR EXCELLENCE)

Academic Year: 2022-2023

Affiliated to Devi Ahilya Vishwavidyalaya, Indore

Syllabus for B.C.A. II Semester

Computer Applications

(Faculty of Computer Science)

DEPARTMENT OF COMPUTER SCIENCE

GOVT. HOLKAR AUTONOMOUS SCIENCE COLLEGE INDORE

Semester Syllabus for Undergraduates (Computer Application)

As recommended by Central Board of Studies of Computer Science and Approved by H E the Governor of M.P.

Academic Year: 2022-2023

Class: B.C.A. II Semester (Computer Applications) for Regular Student

Govt. Holkar (Model Autonomous) Science College, Indore												
Computer Science Department												
Syllabus Session Year: 2022-23												
Programme :Certificate in Application								Class : B.C.A. II Semester				
S.No.	**Paper**	**Paper Title**	**Paper Code**	**Theory Max. Marks 100**				**Practical Max. Marks 100**				
				Credits	**CCE**	**Exter. Asses.**	**Min Marks**	**Credits**	**Inter. Asses.**	**Exter. Asses.**	**Min. Mark.**	**Total Credit**
1	Core Course	Programming Methodology & Data Structures	S2-51-I	4	40	60	35	2	40	60	35	6
2	Minor	Operating Systems	S2-51-M	4	40	60	35	2	40	60	35	6

B.C.A. II Semester Computer Application
S2-51-I: Programming Methodologies & Data Structures
Academic Year: 2022-2023

Part-A Introduction			
Program: Certificate	**Class:** B.C.A.	**Semester: II**	**Session: 2022-23**
Subject: Computer Applications			
Course Code: S2-51-I	**Course Title: Programming Methodology & Data Structures**		
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/ Mathematics in 12th class.		
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 computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming 5. Will be familiar with fundamental data structures, their implementation; become accustomed to the description of algorithms in both functional and procedural styles 6. Have knowledge of complexity of basic operations like insert, delete, and 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 for searching and sorting etc. 11. Know the contributions of Indians in the field of programming and data structures.		
Credit value	**Theory – 4 Credits**		
Total Marks	**Max. Marks: 40+60**	**Min. Passing Marks: 35**	

B.C.A. II Semester Computer Application
S2-51-I: Programming Methodologies & Data Structures
Academic Year: 2022-2023

Part-B: Content of the Course		
No. of Lectures (in hours per week):	**2 Hrs. per week**	
Total no. of Lectures:	**60 Hrs.**	
Para.	**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. **Basics of C++:** A Brief History of C++, Application of C++, Compiling & Linking, Tokens, Keywords, Identifiers & Constants. Basic Data Types, User-Defined Data Types, Symbolic Constant, Type Compatibility, Reference Variables, Operator in C++, Scope Resolution Operator, Member Dereferencing Operators, Memory Management Operators, Manipulators. Type Cast Operator. **Functions In C++:** The Main Function, Function Prototyping, Call by Reference Call by Address, Call by Value, Return by Reference, Inline Function, Default Arguments, Constant Arguments, Function Overloading, Function with Array.	**12**
II	**Classes & Objects:** A Sample C++ Program with Member Functions, Making an Outside Function Inline, Nesting of class, Defining Member Functions, Private Member Functions, Arrays within a Class, Memory Allocation for Objects, Static Data Members, Static Member, Functions. Array of Objects, Object as Function Arguments, Friend Functions, Virtual functions, Returning Objects, Constant member functions, Pointer to Members, Local Classes. **Constructor & Destructor:** Constructor, Parameterized Constructor, Multiple Constructors in a Class, Constructors with Default Arguments, Dynamic Initialization of Objects, Copy Constructor, Dynamic Constructor and Destructor. **Inheritance**: Defining Derived Classes, Single Inheritance. Making a Private Member Inheritable, Multilevel Inheritance. Hierarchical Inheritance, Multiple Inheritance, Hybrid Inheritance, Virtual Base Classes, Abstract Classes, Constructor in Derived Classes, Nesting of Classes. Operator Overloading & Type Conversion, Polymorphism, Pointers, Pointers with Arrays C++, Streams, C++ Stream Classes, Unformatted 1/0 Operation, Formatted 1/0 Operation, Managing Output with Manipulators, Exception Handling.	**14**
III	**Data Structure:** Basic concepts, Linear and Non-Linear data structures **Algorithm Specification:** Introduction, Recursive algorithms, Data Abstraction, Performance analysis. **Arrays:** Representation of single, two-dimensional arrays, triangular - arrays, sparse matrices-array and linked representations. **Stacks**: Operations, Array and Linked Implementations, Applications :Infix to Postfix	**12**

	Conversion, Infix to Prefix. Conversion, Postfix Expression Evaluation, Recursion Implementation. **Queues:** Definition, Operations, Array and Linked Implementations. Circular Queue-Insertion and Deletion Operations, Dequeue (Double Ended Queue), Priority Queue-Implementation.	
IV	**Linked Lists:** Singly Linked Lists, Operations, Concatenating, circularly linked lists-Operations for Circularly linked lists, Doubly Linked Lists- Operations, Doubly Circular Linked List, Header Linked List 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. **Graphs**: Graph ADT, Graph Representations, Graph Traversals, Searching.	**12**
V	**Hashing**: Introduction, Hash tables, Hash functions, Overflow: Handling. **Sorting**: Bubble Sort, Selection Sort, Insertion Sort, Quick Sort, Merge Sort, Comparison of Sorting Methods, **Search Trees**: Binary Search Trees, AVL Trees Definition and Examples. **Indian Contribution to the field:** Innovations 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.	**10**
Keywords/tags: Programming, C++, Data Structures, if, else, for, while, do, call by value, call by reference, recursion, Arrays, Union, Hash, Linear search, Binary search, Bubble sort, Selection sort. Graph, Tree, Stack, Queue, Linked list, Hashing.		

Part-C: Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015 E Balguruswamy,
- "C++", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें.

Reference Books:

- R. Lafore, 'Object Oriented Programming C++"
- N. Dale and C. Weems, "Programming and problem solving with C++: brief edition", Jones & Bartlett Learning
- Adam Droozdek, "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 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 McGraw-Hill

Suggestive digital platform web links :

- https://www.youtube.com/watch?v=BCIS-40yzsA
- http://www.youtube.com/watch?v=vl.nPwxZdW4Y&vien
- https://www.youtube.com/watch?vUmm120S17w

Suggested equivalent online courses:

S.No.	Online Course	Duration	Platform
1	**Programming in C++** https://nptel.ac.in/courses/106/105/106105151/	**8 weeks**	**NPTEL**
2	**Beginning C++ Programming – From Beginner to Beyond** https://www.udemy.com/course/begining-c-plus-plus-programming/	**Self-paced**	**Udemy**

B.C.A. II Semester Computer Application
S2-51-I: Programming Methodologies & Data Structures
Academic Year: 2022-2023

<table>
<tr><th colspan="5">Part-D: Assessment and Evaluation</th></tr>
<tr><td colspan="3">Internal Assessment: Continuous Comprehensive Evaluation (CCE): 40 Marks
Shall be based on allotted assignments and Class Test. The division of marks is as follows:</td><td colspan="2">External Assessment: University Exam (UE): 60 Marks
Time: 03:00 Hours</td></tr>
<tr><td>A. Submission of Assignment followed by Presentation</td><td colspan="2"></td><td>Section A: 03 Very Short Questions</td><td>03x02 = 06 Marks</td></tr>
<tr><td>B. Class Test</td><td>Best Two test marks 20 Marks</td><td rowspan="4">Best two test Marks 40 Marks</td><td rowspan="2">Section B: Four Short Questions (200 Words Each)</td><td rowspan="2">04x08 = 32 Marks</td></tr>
<tr><td>Test I (Written Test)</td><td>20 Marks</td></tr>
<tr><td>Test I (Written Test)</td><td>20 Marks</td><td rowspan="2">Section C: Two Long Questions (500 Words Each)</td><td rowspan="2">02x11 = 22 Marks</td></tr>
<tr><td>Test III (Quiz/ Seminar/ Assignment)</td><td>20 Marks</td></tr>
<tr><td>Total Internal Assessment (Theory) Marks (A+B)</td><td colspan="2">40 Marks</td><td>Total External Evaluation (Theory) Marks (A+B+ C)</td><td>60 Marks</td></tr>
<tr><td colspan="5">Any remark/ Suggestion: 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.</td></tr>
</table>

B.C.A. II Semester Computer Application
S2-51-PI : Programming Methodology & Data Structures Lab
Academic Year: 2022-2023

Part-A Introduction			
Program: Certificate	**Class:** B.C.A.	**Semester: II**	**Session: 2022-2023**
Subject: Computer Application			
Course Code: S2-51-PI	**Course Title: Programming Methodology & Data Structures Lab**		
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/ Mathematics in 12^{th} class.		
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. Write efficient and well-structured computer algorithms/programs. 3. Learn to formulate iterative solutions and array processing algorithms for problems. 4. Use recursive techniques, pointers and searching methods in programming. 5. Possess ability to choose a data structure to suitably model any data used in computer applications. 6. Implement algorithms for searching and sorting.		
Credit value	**Practical- 2 Credits**		
Total Marks	**Max. Marks: 40+60**	**Min. Passing Marks: 35**	

B.C.A. II Semester Computer Application
S2-51-PI : Programming Methodology & Data Structures Lab
Academic Year: 2022-2023

Part-B: Content of the Course		
No. of Lab Practical's (in hours per week):	**1 Hrs. per week**	
Total no. of Labs:	**30 Hrs.**	
Para.	**Suggestive list of Practicals**	**No. of Labs.**
	Given the problem statement, students are required to formulate problem, develop flowchart/algorithm, write code in C++, execute and test it. Students should be given assignments on following: 1. Write a program to swap the contents of two variables. 2. Write a program for finding the roots of a Quadratic Equation. 3. Write a program to find area of a circle, rectangle and square using switch case. 4. Write a program to print table of any number. 5. Write a program to print Fibonacci series. 6. Write a program to find factorial of a given number using recursion 7. Write a program to convert decimal (integer) number into equivalent binary number, 8. Write a program to check given string is palindrome or not. 9. Write a program to print digits of entered number in reverse order. 10. Write a program to print sum of two matrices. 11. Write a program to print multiplication of two matrices. 12. Write a program to generate even/odd series from 1 to 100. 13. Write a program whether a given number is prime or not. 14. Write a program for call by value and call by reference. 15. Write a program to create a pyramid structure 1 12 123 1234 16. Write a program to check entered number is Armstrong or not. 17. Write a program to read N numbers and find their average. 18. Write a program to find the area and volume of a rectangular box using constructor. 19. Write a program to design a class time with hours, minutes and seconds as data members. Use a data function to perform the addition of two time	**30**

	objects in hours, minutes and seconds, 20. Write a program to implement single inheritance. 21. Write a program to find largest element from an array. 22. Write a program to implement push and pop operations on a stack using array. 23. Write a program to perform insert and delete operations on a queue using array. 24. Write a program for Linear search. 25. Write a program for Binary search. 26. Write a program for Bubble sort. 27. Write a program for Selection sort. 28. Write a program for Quick sort. 29. Write a program for Insertion sort. 30. Write a program to implement linked list.	
Keywords/tags: **Keywords/tags**: Programming, C++, Data Structures, if, else, for, while, do, call by value, call by reference, recursion, Arrays, Union, Linear search, Binary search, Bubble sort, Selection sort. Graph, Tree, Stack, Queue, Linked list.		

Part-C: Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- J. R. Hanly and E. B. Koffman, "Problem Solving and Program Design in C", Pearson, 2015 E Balguruswamy,
- "C++", TMH Publication ISBN O-07-462038-X
- Herbert Shildt, "C++ The Complete Reference "TMH Publication ISBN 0-07-463880-7
- मध्य प्रदेश हिंदी ग्रंथ अकादमी से प्रकाशित विषय से संबंधित पुस्तकें|

Reference Books:

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- Adam Droozdek, "Data Structures and algorithm in C++, Third Edition, Cengage Learning.
- Sartaj Sahani, "Data Structures, Algorithms and Applications with C++", McGraw Hill.
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- M. A. Weiss, "Data structures and Algorithm Analysis in C", 2nd edition, Pearson. Lipschutz. "Schaum's outline series Data structures". "Tata McGraw-Hill.

Suggestive digital platform web links :

- https://www.youtube.com/watch?v=BCIS-40yzsA
- http://www.youtube.com/watch?v=vl.nPwxZdW4Y&vien
- https/www.youtube.com/watch?v Umm120S17w

Suggested equivalent online courses:

S.No.	Online Course	Duration	Platform
1	**Programming in C++** https://nptel.ac.in/courses/106/105/106105151/	**8 weeks**	**NPTEL**
2	**Beginning C++ Programming – From Beginner to Beyond** https://www.udemy.com/course/begining-c-plus-plus-programming/	**Self-paced**	**Udemy**

B.C.A. II Semester Computer Application
S2-51-PI : Programming Methodology & Data Structures Lab
Academic Year: 2022-2023

Part-D: Assessment and Evaluation	
Internal Assessment (A):	**40 Marks**
Lab Record / Class interaction/ Quiz	15 Marks
Attendance in the Lab	05 Marks
Assignments (Industrial Training (10 hours) / Mini Project (Project Demo + Report))	20 Marks
End Semester External Evaluation (B):	**60 Marks**
Viva Voce on Practical	10 Marks
Practical Record File	10 Marks
Experiments	40 Marks
Total Marks (A+B)	**100 Marks**

B.C.A. II Semester Computer Application
S2-51-M : Operating System
Academic Year: 2022-2023

Part-A Introduction			
Program: Certificate	**Class:** B.C.A.	**Semester: II**	**Session: 2022-2023**
Subject: Computer Application			
Course Code: S2-51-M	**Course Title: Operating Systems**		
Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):	**Minor**		
Pre-requisite (If any):	Open for All.		
Course Learning Outcomes (CLO)	**After the completion of this course, a student shall be able to do the following:** 1. Describe the importance of computer system resources and the role of operating system in their management policies and algorithms. 2. Specify objectives of modem operating systems and describe how operating systems have evolved over time. 3. Understand various process management concepts and can compare various scheduling techniques synchronization, and deadlocks. 4. Describe the concepts of memory management techniques. 5. Identify the best suited process management technique for any process. 6. Describe various file operations, fi1e allocation methods and disk space management. 7. To understand and identify potential threats to operating systems and the security features to guard against them. 8. Learn to operate the Linux system		
Credit value	**Theory – 4 Credits**		
Total Marks	**Max. Marks: 40+60**	**Min. Passing Marks: 35**	

B.C.A. II Semester Computer Application
S2-51-M : Operating System
Academic Year: 2022-2023

Part-B: Content of the Course		
No. of Lectures (in hours per week):	**2 Hrs. per week**	
Total no. of Lectures:	**60 Hrs.**	
Para.	**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- Batch Systems, Multiprogramming Systems, Multiprocessing Systems, Time Sharing Systems, Distributed OS, Real time systems. Operating System for Personal Computers, Workstations and Hand-held Devices. Applications of various operating systems in real world. Some prevalent operating systems - Windows, UNIX/Linux, Android, MAC OS, Blackberry OS, Symbian, Bada etc.	**12**
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.	**12**
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)	**12**
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.	**12**

V	**LINUX:** Introduction, History and features of Linux, advantages, hardware requirements for installation, Linux architecture, file system of Linux – boot block, super block, inode table and 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**.** **Indian contribution to the field**- the BOSS operating system, open source softwares, growth of LINUX, Aryabhatt Linux, contributions of innovators – RajenSheth, Sunder Pichai etc.	**12**

B.C.A. II Semester Computer Application
S2-51-M : Operating System
Academic Year: 2022-2023

Part-C: Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8th Edition, John Wiley Publications.
- A.S. Tanenbaum, Modem Operating Systems, 3rd Edition, Pearson Education.
- Operating System by Peterson
- Linux by Sumitabh Dasi
- मध्यप्रदेश हिंदी ग्रन्थ अकादमी से प्रकाशित विषय से सम्बंधित पुस्तकें|

Reference Books:

- G. Nutt, Operating Systems: A Modern Perspective, 2nd Edition Pearson Education.
- W. Stallings, Operating Systems, Internals & Design Principles, 8th Edition, Pearson Education.
- M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill.
- Operating System design and Concepts by Milan Milenkovic.

Suggestive digital platform web links :

- https://web.fitd.ac.in/-minati/MTL458.html
- https://www.csc.iith.ac.in/-mythili/os/
- https://www.youtube.com/ watch?vaCJ3Ygoo HQ

Suggested equivalent online courses:

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

B.C.A. II Semester Computer Application
S2-51-M : Operating System
Academic Year: 2022-2023

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<tr><th colspan="5">Part-D: Assessment and Evaluation</th></tr>
<tr><td colspan="3">Internal Assessment: Continuous Comprehensive Evaluation (CCE): 40 Marks
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B.C.A. II Semester Computer Application
S2-51-PM : Operating System Lab
Academic Year: 2022-2023

Part-A Introduction			
Program: Certificate	**Class:** B.C.A.	**Semester: II**	**Session: 2022-2023**
Subject: Computer Applications			
Course Code: S2-51-PM	**Course Title: Operating Systems Lab**		
Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):	**Minor**		
Pre-requisite (If any):	Open for All.		
Course Learning Outcomes (CLO)	**After the Completion of this course, a student shall be able to:** • Operate the Linux System • Do administration • Use Vi Editor.		
Credit value	**Practical- 2 Credits**		
Total Marks	**Max. Marks: 40+60**	**Min. Passing Marks: 35**	

B.C.A. II Semester Computer Application
S2-51-PM : Operating System Lab
Academic Year: 2022-2023

Part-B: Content of the Course		
No. of Lab Practical's (in hours per week):		**2 Hrs. per week**
Total no. of Labs:		**30 Hrs.**
	Suggestive list of Practicals	**No. of Labs.**
	Linux: a) **Linux Directory Commands**: pwd, mkdir, rm -rf, ls, cd,cd /, cd~ b) **Linux File Commands:** touch, cat, cat>, cat >>, rrn , 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, 1ess, grep, cat, cut, comm, sed, tee, tr, uniq, wc, od, sor1, 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.	

Part-C: Learning Resources

Text Books, Reference Books, Other Resources

Suggested Readings:

- Linux by Sumitabh Das
- Linux Bible
- मध्यप्रदेश हिंदी ग्रन्थ अकादमी से प्रकाशित विषय से सम्बंधित पुस्तकें|

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/106/102/106102132/3
- https://www.youtube.com/watch?v=OHCMfsNpqCc

B.C.A. II Semester Computer Application
S2-51-PM : Operating System Lab
Academic Year: 2022-2023

Part-D: Assessment and Evaluation	
Internal Assessment (A):	**40 Marks**
Lab Record / Class interaction/ Quiz	15 Marks
Attendance in the Lab	05 Marks
Assignments (Industrial Training (10 hours) / Mini Project (Project Demo + Report))	20 Marks
End Semester External Evaluation (B):	**60 Marks**
Viva Voce on Practical	10 Marks
Practical Record File	10 Marks
Experiments	40 Marks
Total Marks (A+B)	**100 Marks**

BCA II Semester Computer Application

S2-51-G1 : हिन्दी भाषा

Academic Year: 2022-2023

(भाग- ए) परिचय			
कार्यक्रम : प्रमाण-पत्र	कक्षा : बी.सी ए	**Semester: II**	सत्र: **2020-2021**
विषयः Computer Application			
कोर्स कोड: S2-51-G1	**कोर्स का शीर्षक: भाषा और संस्कृति**		
कोर्स का प्रकारः	**आधार पाठ्यक्रम**		
कोर्स अपेक्षित	**कक्षा 12वी उत्तीर्ण किसी भी विषय समूह से।**		
कोर्स अधिगम उपलब्धि (लर्निंग आउटकम).	1. **उत्कृष्ट साहित्यिक पाठों के अध्ययन से रुचि का विकास करना।** 2. **सांस्कृतिक चेतना और राष्ट्रीय भावना का विकास करना।** 3. **भाषा-ज्ञान। |** 4. **सामान्य शब्दावली और विशेष शब्दावली 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			
कुल व्याख्यान (घंटा प्रति सप्ताह):		(1 **घंटा प्रति सप्ताह**)	
कुल व्याख्यान		15 **घंटे**	

पेरा	विषयः.	कुल व्याख्यान
एक	1. **मैथिलीशरण गुप्त. परिचय । पाठः मातृभूमि (कविता)** 2. **प्रेमचन्दः परिचय पाठः शतंरज के खिलाडी (कहानी)** 3. **व्यंग्यः शरद जोशी–जीप पर सवार इल्लियाँ**	5 घण्टे
दो	1. **वैचारिक–भारतीय भाषाओं में राम** 2. **आचार्य रामचन्द्र शुक्ल: परिचय पाठः उत्साह (भावमूलक निबन्ध)** 3. **रामधारी सिंह दिनकरः परिचय पाठः भारत एक है (संस्कृति)** 4. **आदिशंकराचार्य-जीवन व दर्शन**	5 घण्टे

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 घण्टे

सर्च करे:

- मैथिलीशरण गुप्तः **मैथिलीशरण गुप्त की कविता मातृभूमि**,
- प्रेमचंद: प्रेमचंद शतरंज के खिलाडी
- रामधारी सिंह दिनकर: भारत एक है रामधारी सिंह दिनकर
- आचार्य रामचन्द्र शुक्ल : उत्साह निबंध रामचन्द्र शुक्ल
- स्वामी विवेकानन्द : शिकागो 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 सी) अनुशंसित अध्ययन संसाधन

पाठ्य पुस्तके, सन्दर्भ पुस्तकें, अन्य संसाधन

1. प्रेमचन्द- मानसरोवर, खण्ड:3
2. आचार्य रामचन्द्र शुक्ल- चिन्तामणि, भाग 1
3. डॉ. वासुदेव नन्दन प्रसादः आधुनिक हिन्दी व्याकरण और रचना, भारती भवन, ठाकुर बाडी रोड ,पटना, बिहार
4. डॉ. राजेश्वर चतुर्वेदी, हिन्दी व्याकरण– उपकार प्रकाशन, आगरा उ.प्र.
5. हिन्दी ज्ञान कोश
6. इन्टर नेट सामग्री- टैग में उल्लेखित

(भाग-डी) आकलन और मूल्यांकन

अधिकतम अंक: 50	**आंतरिक मूल्यांकन:** 20 अंक	**बाहरी मूल्यांकन:** 30 अंक	**कुल:** 50 अंक

आंतरिक मूल्यांकन: सतत व्यापक मूल्यांकन (सीसीई): 20 अंक आवंटित असाइनमेंट और क्लास टेस्ट पर आधारित होगा।	**बाहरी मूल्यांकन:** विश्वविद्यालय परीक्षा: 30 अंक तीस बहुविकल्पीय / वस्तुनिष्ठ / सही-गलत प्रकार के प्रश्न पूछे जाने हैं। प्र प्रश्न एक अंक का होता है।

BCA II Semester Computer Application
S2-51-G2 : Environmental Education
Academic Year: 2022-2023

Part-A Introduction			
Program: Certificate	**Class:** B.C.A.	**Semester: II**	**Session: 2020-2021**
Subject: Computer Application			
Course Code: S2-51-G2	**Course Title: Environmental Education**		
Course Type (Core Course/ Elective/ Generic Elective/ Vocational...):	**Foundation Course**		
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 sides. To study this course, the student must have knowledge about the environmental components, pollution, biodiversity, and ecosystem at senior secondary, class 12th level.		
Course Learning Outcomes (CLO)	**After the Completion of this course, a student shall be able to:** 1. To understand various aspects of life forms, 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 towards 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.		
Credit value	**Theory – 2 Credits**		
Total Marks	**Max. Marks: 50**	**Min. Passing Marks: 17**	
Part-B: Content of the Course			
No. of Lectures (in hours per week):		**1 Hrs. per week**	

Total no. of Lectures:		15 Hrs.
Para.	**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***	**10**
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***	**10**
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.***	**10**
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		
Text Books, Reference Books, Other Resources		

Suggested Readings:

- 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) 2° 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)
- इराक भरूचा, पर्यावरण अध्ययन ओरियंट ब्लैकस्वान प्राइवेट लिमिटेड नई दिल्ली (2014)
- दयाशंकर त्रिपाठी पर्यावरण अध्ययन मोतीलाल बनारसीलाल पब्लिशर्स दिल्ली(2005)
- रतन जोशी , पर्यावरण अध्ययन, साहित्य भवन पब्लिकेशन्स(2018)

Suggested equivalent online courses:

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

Part-D: Assessment and Evaluation

Max Marks: 50	**Internal Assessment:** 20 Marks	**External Assessment:** 30 Marks	**Total:** 50 Marks

Internal Assessment: Continuous Comprehensive Evaluation (CCE): **20 Marks** Shall be based on allotted assignments and Class Test.	**External Assessment:** University Exam : **30 Marks** Thirty Multiple choice/ Objective/ True-False type questions to be asked. Each question carries one mark.

Any remark/ Suggestion: 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.