ಕ್ರ.ಸಂ.ಗುವಿಕ/ವಿಮವಿ/ಬಿಟಿಸ್/2022–23/ **97**   ದಿನಾಂಕ:– **13.02.2023**

ಅಧಿಸೂಚನೆ

ವಿಷಯ :– ಬಿ.ಎಸ್ಸಿ ಸ್ನಾತಕ ಪದವಿಯ ಗಣಕ ವಿಜ್ಞಾನ ವಿಷಯದ NEP–2020 ರ ಅಡಿಯಲ್ಲಿ ಒಂದರಿಂದ ನಾಲ್ಕನೆಯ ಸೆಮೆಸ್ಟರ್ ಪಠ್ಯಕ್ರಮವನ್ನು ಪರಿಷ್ಕರಿಸಿ ಜಾರಿಗೊಳಿಸಿದ ಬಗ್ಗೆ.

ಉಲ್ಲೇಖ : 1. GUK/ACA/BOS-NEP/2022-23/01 ದಿನಾಂಕ:- 19/09/2022
2. ಗಣಕ ವಿಜ್ಞಾನ ಸ್ನಾತಕ ಅಧ್ಯಯನ ಮಂಡಳಿ ಸಭೆಯ ದಿನಾಂಕ:–22/09/2022
3. ವಿಜ್ಞಾನ ನಿಕಾಯದ ಸಮಿತಿ ಸಭೆಯ ದಿನಾಂಕ:– 26/09/2022
4. ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಅನುಮೋದನೆ ದಿನಾಂಕ;–08/11/2022

ಉಲ್ಲೇಖ (3) ರ ಮಾನ್ಯ ಕುಲಪತಿಗಳ ಒಪ್ಪಿಗೆ ಮೇರೆಗೆ ವಿದ್ಯಾವಿಷಯಕ ಪರಿಷತ್ತಿನ ಘಟನೋತ್ತರ ಅನುಮೋದನೆಯನ್ನು ನಿರೀಕ್ಷಿಸಿ ಗಣಕ ವಿಜ್ಞಾನ ಅಧ್ಯಯನ ಮಂಡಳಿ ಹಾಗೂ ವಿಜ್ಞಾನ ನಿಕಾಯದ ಸಭೆಯಲ್ಲಿ ಅನುಮೋದನೆ ಪಡೆಯಲಾಗಿರುವ ಸ್ನಾತಕ ಬಿ.ಎಸ್ಸಿ ಪದವಿಯ ಗಣಕ ವಿಜ್ಞಾನ ವಿಷಯದ ಒಂದರಿಂದ ನಾಲ್ಕನೆಯ ಸೆಮೆಸ್ಟರ್ ಪಠ್ಯಕ್ರಮವನ್ನು 2022–23 ನೇ ಶೈಕ್ಷಣಿಕ ಸಾಲಿನಿಂದ ಅನ್ವಯವಾಗುವಂತೆ ಪರಿಷ್ಕರಿಸಿ ಜಾರಿಗೊಳಿಸಲಾಗಿದೆ.

ಈ ಮಾಹಿತಿಯನ್ನು ಸಂಬಂಧಪಟ್ಟ ಶಿಕ್ಷಕರ ಹಾಗೂ ವಿದ್ಯಾರ್ಥಿಗಳ ಗಮನಕ್ಕೆ ತರಲು ಸೂಚಿಸಲಾಗಿದೆ.

ಪಠ್ಯಕ್ರಮದ ವಿವರಗಳನ್ನು ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯದ ವೆಬ್‌ಸೈಟ್ www.gug.ac.in ದಿಂದ ಪಡೆಯಬಹುದಾಗಿದೆ,

ಕುಲಸಚಿವರು **13/4**
ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ

ಗೆ,

1. ಮುಖ್ಯಸ್ಥರು, ಗಣಕ ವಿಜ್ಞಾನ ವಿಷಯದ ಅಧ್ಯಯನ ವಿಭಾಗ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ
2. ಎಲ್ಲಾ ಪದವಿ ಕಾಲೇಜಗಳ ಪ್ರಾಂಶುಪಾಲರಿಗೆ.

ಪ್ರತಿಗಳು:

1. ಡೀನರು, ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ನಿಕಾಯ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ, ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
2. ಕುಲಸಚಿವರು (ಮೌಲ್ಯಮಾಪನ) ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ
3. ನಿರ್ದೇಶಕರು, ಪಿಎಂಇಬಿ ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
4. ಗ್ರಂಥಪಾಲಕರು, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
5. ವಿಜ್ಞಾನ ಮತ್ತು ತಂತ್ರಜ್ಞಾನ ನಿಕಾಯದ ಎಲ್ಲಾ ಅಧ್ಯಯನ ವಿಭಾಗಗಳ ಮುಖ್ಯಸ್ಥರಿಗೆ ಗಿ.ವಿ.ಕಲಬುರಗಿ.
6. ಸಂಯೋಜಕರು, ಟಾಸ್ಕ್‌ಪೋರ್ಸ್ ಸಮಿತಿ, ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
7. ವಿಶೇಷಾಧಿಕಾರಿಗಳು, ಆಡಳಿತ, ವಿದ್ಯಾಮಂಡಲ, ಪರೀಕ್ಷಾ, ಅಭಿವೃದ್ಧಿ ಗು.ವಿ. ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
8. ಮುಖ್ಯಸ್ಥರು, ಗಣಕ ಕೇಂದ್ರ, ಗು.ವಿ.ಕಲಬುರಗಿ ರವರಿಗೆ ವೆಬ್‌ಸೈಟ್‌ನಲ್ಲಿ ಪ್ರತ್ಯೇಕ ಪೋರ್ಟಲ್‌ನಲ್ಲಿ ಪ್ರಕಟಿಸಲು ಸೂಚಿಸಲಾಗಿದೆ.
9. ಕುಲಪತಿಗಳ ಆಪ್ತ ಕಾರ್ಯದರ್ಶಿ/ಕುಲಸಚಿವರ ಆಪ್ತ ಸಹಾಯಕರ ಗು.ವಿ.ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.
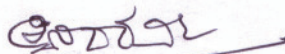10. ನೋಡಲ್ ಅಧಿಕಾರಿಗಳ UUCMS ಗುಲಬರ್ಗಾ ವಿಶ್ವವಿದ್ಯಾಲಯ,ಕಲಬುರಗಿ ರವರ ಮಾಹಿತಿಗಾಗಿ.

Semester: III

Course Code:CSDSC3T	Course Title: Object Oriented Programming using JAVA
Course Credits: 04	Hour of Teaching/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 02 Hours

Course Outcomes (COs):

At the end of the course, students will be able to:

- Explain the object-oriented concepts and JAVA.
- Write JAVA programs using OOP concepts like Abstraction, Encapsulation, Inheritance and Polymorphism.
- Implement Classes and multithreading using JAVA.
- Demonstrate the basic principles of creating Java applications with GUI.

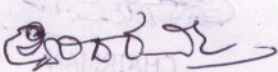| Content	Hours
Unit – 1	
Introduction to Java: Basics of Java programming, Data types, Variables, Operators, Control structures including selection, Looping, Java methods, Overloading, Math class, Arrays in java.	10
Unit – 2	
Objects and Classes: Basics of objects and classes in java, Constructors, Finalizer, Visibility modifiers, Methods and objects, Inbuilt classes like String, Character, String Buffer, File, this reference.	10
Unit – 3	
Inheritance and Polymorphism: Inheritance in java, Super and sub class, Overriding, Object class, Polymorphism, Dynamic binding, Generic programming, Casting objects, Instance of operator, Abstract class, Interface in java, Package in java, UTIL package.	12

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Unit – 4	
Event and GUI programming: Event handling in java, Event types, Mouse and key events, GUI Basics, Panels, Frames, Layout Managers: Flow Layout, Border Layout, Grid Layout, GUI components like Buttons, Check Boxes, Radio Buttons, Labels, Text Fields, Text Areas, Combo Boxes, Lists, Scroll Bars, Sliders, Windows, Menus, Dialog Box, Applet and its life cycle, Introduction to swing, Exceptional handling mechanism.	10
Unit – 5	
I/O programming: Text and Binary I/O, Binary I/O classes, Object I/O, Random Access Files. Multithreading in java: Thread life cycle and methods, Runnable interface, Thread synchronization, Exception handling with try catch-finally, Collections in java, Introduction to JavaBeans and Network Programming.	10

References:

1. Programming with Java, By E Balagurusamy – A Primer, 4th Edition, McGraw Hill Publication.
2. Core Java Volume I – Fundamentals, By Cay S. Horstmann, Prentice Hall.
3. Object Oriented Programming with Java: Somashekara M.T., Guru, D.S., Manjunatha K.S, 1st Edition, PHI Learning 2017.
4. Java 2 - The Complete Reference, Herbert Schildt, 5th Edition, McGraw Hill Publication, 2017.
5. Java - The Complete Reference, Herbert Schildt, 7th Edition, McGraw Hill Publication, 2017.

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Course Code: CSDSC3P	Course Title: JAVA Lab
Course Credits: 02	Hour of Practical/Week: 04
Total Contact Hours: 52	Formative Assessment Marks: 25
Exam Marks: 25	Exam Duration: 02 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Implement Object Oriented programming concept using basic syntaxes of control Structures.
- Identify classes, objects, members of a class and the relationships among them needed for a finding the solution to specific problem.
- Demonstrates how to achieve reusability using inheritance
- Demonstrate understanding and use of interfaces, packages, different exception handling mechanisms and concept of multithreading for robust faster and efficient application development.
- Identify and describe common user interface components to design GUI in Java using Applet & AWT along with response to events
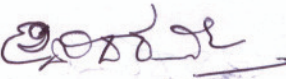
Practice Lab

1. Program to print the following triangle of numbers

    1
    1 2
    1 2 3
    1 2 3 4
    1 2 3 4 5

2. Program to simple java application, to print the message, "Welcome to java"
3. Program to display the month of a year. Months of the year should be held in an array.
4. Program to find the area of rectangle.
5. program to demonstrate a division by zero exception
6. Program to create a user defined exception say Pay out of Bounds.

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Programming Lab

PART A: Java Fundamentals OOPs in Java

1. Program to assign two integer values to X and Y. Using the 'if' statement the Output of the program should display a message whether X is greater than Y.

2. Program to list the factorial of the numbers 1 to 10. To calculate the factorial value, use while loop. (Hint Fact of 4 =4*3*2*1)

3. Program to add two integers and two float numbers. When no arguments are supplied, give a default value to calculate the sum. Use function overloading.

4. Program to perform mathematical operations. Create a class called AddSub with methods to add and subtract. Create another class called MulDiv that extends from AddSub class to use the member data of the super class. MulDiv should have methods to multiply and divide A main function should access the methods and perform the mathematical operations.

5. Program with class variable that is available for all instances of a class. Use static variable declaration. Observe the changes that occur in the object's member variable values.

6. Program to find the area and circumference of the circle by accepting the radius from the user.

7. To accept a number and find whether the number is Prime or not

8. Program to create a student class with following attributes;
    Enrollment No: Name, Mark of sub1, Mark of sub2, mark of sub3, Total Marks. Total of the three marks must be calculated only when the student passes in all three subjects. The pass mark for each subject is 50. If a candidate fails in any one of the subjects his total mark must be declared as zero. Using this condition write a constructor for this class. Write separate functions for accepting and displaying student details. In the main method create an array of three student objects and display the details.

9. In a college first year class are having the following attributes Name of the class (BCA, B.Com, BSc), Name of the staff No of the students in the class, Array of students in the class

10. Define a class called first year with above attributes and define a suitable constructor. Also write a method called best Student () which process a first-year object and return the student with the highest total mark. In the main method define a first-year object and find the best student of this class

11. Program to define a class called employee with the name and date of appointment. Create ten employee objects as an array and sort them as per their date of appointment. i.e., print them as per their seniority.

12. Createapackage'student.Fulltime.BCA'inyourcurrentworkingdirectory

a. Create a default class student in the above package with the following attributes: Name, age, sex.

b. Have methods for storing as well as displaying

PART B: Exception Handling & GUI Programming

1. Program to catch Negative Array Size Exception. This exception is caused when the array is initialized to negative values.
2. Program to handle Null Pointer Exception and use the "finally" method to display a message to the user.
3. Program which create and displays a message on the window
4. Program to draw several shapes in the created window

5. Program to create an applet and draw gridlines
6. Program which creates a frame with two buttons father and mother. When we click the father button the name of the father, his age and designation must appear. When we click mother similar details of mother also appear.
7. Create a frame which displays your personal details with respect to a button click
8. Create a simple applet which reveals the personal information of yours.
9. Program to move different shapes according to the arrow key pressed.
10. Program to create a window when we press M or m the window displays Good Morning, A or a the window displays Good After Noon E or e the window displays Good Evening, N or n the window displays Good Night
11. Demonstrate the various mouse handling events using suitable example.
12. Program to create menu bar and pull-down menus.

Note: Student has to execute a minimum of 10 programs in each part to complete the Lab course

Evaluation Scheme for Lab Examination

Assessment Criteria		Marks
Program – 1 from Part A	Flowchart / Algorithm	03
	Writing the Program	05
Program -2 from Part B	Flowchart/Algorithm	03
	Writing the Program	05
Execute any one program of Examiner choice		06
	Viva Voce	03
Total		**25**

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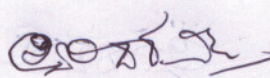
Course Code: CSOET3	Course Title: C Programming Concepts
Course Credits: 03	Hours/Week: 03
Total Contact Hours: 42	Formative Assessment Marks: 40
Exam Marks: 60	Exam Duration: 02 Hours

Course Outcomes (COs):

After completing this course satisfactorily, a student will be able to:

- Confidently operate Desktop Computers to carry out computational tasks
- Understand working of Hardware and Software and the importance of operatingsystems
- Understand programming languages, number systems, peripheral devices, networking, multimedia and internet concepts
- Read, understand and trace the execution of programs written in C language
- Write the C code for a given problem
- Perform input and output operations using programs in C
- Write programs that perform operations on arrays

Content	Hours
Unit – 1	
Fundamentals of Computers: Introduction to Computers - Computer Definition, Characteristics of Computers, Types of Computers, Basic Organization of a Digital Computer; Number Systems – different types; Computer Codes – BCD, Gray Code, ASCII and Unicode; Boolean Algebra – Boolean Operators with Truth Tables; Types of Software – System Software and Utility Software; Computer Languages - Machine Level, Assembly Level & High Level Languages, Translator Programs – Assembler, Interpreter and Compiler; Planning a Computer Program - Algorithm, Flowchart and Pseudo code with Examples.	10
Unit – 2	
Introduction to C Programming: Over View of C; History and Features of C; Structure of a C Program with Examples; Creating and Executing a C Program; Compilation process in C. **C Programming Basic Concepts:** C Character Set; C tokens - keywords, identifiers, constants, and variables; Data types; Declaration & initialization of variables; Symbolic constants. **Input and output with C:** Formatted I/O functions - *printf* and *scanf,* control stings and escape sequences, output specifications with *printf* functions; Unformatted I/O	08
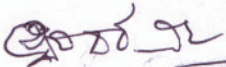
functions to read and display single character and a string - *getchar, putchar, gets* and *puts* functions.

Unit – 3

C Operators & Expressions: Arithmetic operators; Relational operators; Logical operators; Assignment operators; Increment & Decrement operators; Bitwise operators; Conditional operator; Special operators; Operator Precedence and Associatively; Evaluation of arithmetic expressions; Type conversion. **Control Structures:** Decision making Statements - *Simple if, if_else, nested if_else, else_if ladder,Switch-case, goto, break &continue* statements; Looping Statements - Entry controlled and Exit controlled statements, *while, do-while, for* loops, Nested loops.	08

Unit – 4

Arrays: One Dimensional arrays - Declaration, Initialization and Memory representation; Two Dimensional arrays - Declaration, Initialization and Memory representation. **Strings:** Declaring & Initializing string variables; String handling functions - *strlen, strcmp, strcpy and strcat;* Character handling functions - *toascii, toupper, tolower, isalpha, isnumeric* etc.	08

Unit 5

User Defined Functions: Need for user defined functions; Format of C user defined functions; Components of user defined functions - return type, name, parameter list, function body, return statement and function call; Categories of user defined functions - With and without parameters and return type.	08

Text Books:
1. M.T.Somashekara ,Problem Solving with C, 2E, PHI Learning.
2. Pradeep K. Sinha and Priti Sinha: Computer Fundamentals(Sixth Edition), BPB Publication
3. E. Balgurusamy: Programming in ANSI C (TMH)

References:

1. Kamthane: Programming with ANSI and TURBO C (Pearson Education)
2. V. Rajaraman: Programming in C (PHI –EEE)
3. S. ByronGottfried: Programming with C (TMH)
4. Kernighan & Ritche: The C Programming Language (PHI)
5. Yashwant Kanitkar: Let us C
6. P.B. Kottur: Programming in C (Sapna Book House)

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