BASIRHAT COLLEGE

DEPARTMENT OF COMPUTER SCIENCE

LESSON PLAN-2019-2020

B.Sc. Program with Computer Science (GE/DSC)

Semester-I

Paper Title- Problem Solving with Computer

Paper Code- CMSGCOR01T

Credits-4

COURSE OUTCOME: -
After completion of this course the students will be able –

CO1 Recognize the basic Basic Computer Organization like CPU, ALU, memory hierarchy, registers,I/O devices etc.

CO2 Recognize the basic data types , control statementsand and Loop in Python Program.

CO3. Summarize the concept of Objects and Classes, Inheritance, Regular

Expressions,Event Driven Programming in Python Program.

CO4. To create efficient program using functions to implement reusability.

CO5. Apply the structures in making application software using GUI Programming.

CO6. Generate files and use preprocessor for real world application.

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
July	Introduction to Computers: Characteristics of Computers, Uses of computers, Types and generations of Computers. Basic Computer Organization - Units of a computer, CPU, ALU, memory hierarchy, registers, I/O devices.

1. Write a menu driven program to convert the given temperature | **DP** | **DP-9** | Theoretical-6 Practical-6 Tutorial-02 |

	from Fahrenheit to Celsius and vice versa depending upon user''s choice. 2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria : a. Grade A: Percentage >=80 b. Grade B: Percentage>=70 and <80 c. Grade C: Percentage>=60 and <70 d. Grade D: Percentage>=40 and <60 e. Grade E: Percentage<40 3. Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input parameters from user.		**FA-5**	
	Concept of problem solving, Problem definition, Program design, Debugging, Types of errors in programming, Documentation. 4. WAP to display the first n terms of Fibonacci series. 5. WAP to find factorial of the given number.	**FA**		
August	Flowcharting, decision table, algorithms, Structured programming concepts, Programming methodologies viz. top-down and bottom-up programming.	**DP**	**DP-13** **FA-7**	Theoretical-8 Practical-10 Tutorial-02

	Structure of a Python Program, Elements of Python Python Interpreter, Using Python as calculator, Python shell,Indentation. Atoms, 6. WAP to find sum of the following series for n terms: $1 – 2/2! + 3/3! - - - - - n/n!$ 7. WAP to calculate the sum and product of two compatible matrices.			
	Identifiers and keywords, Literals, Strings, Operators (Arithmetic operator, Relational operator, *All the programs should be written using user defined functions, wherever possible.* 1. Write a menu-driven program to create mathematical 3D objects I. curve II. sphere	**FA**		
September	Operators (Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator). III. cone IV. arrow V. ring VI. Cylinder.	**DP**	**DP-13** **FA-7**	Theoretical-8 Practical-10 Tutorial-02
	Input and Output Statements, Control statements (Looping-whileLoop, for Loop , Loop Control,			

	2. WAP to read n integers and display them as a histogram.	**FA**		
October	Loop Control, Conditional Statement- if...else, Difference between break, continue and pass). 3. WAP to display sine, cosine, polynomial and exponential curves.	**DP**	**DP-5**	Theoretical-2 Practical-2 Tutorial-01
November	Numbers, Strings, Lists, Tuples, Dictionary, Date & Time, Modules, 4.WAP to plot a graph of people with pulse rate p vs. height h. The values of p and h are to be entered by the user. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m=60/(t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.	**DP**	**DP-15** **FA-7**	Theoretical-8 Practical-12 Tutorial-02
	Functions, Exit function, default arguments.	**FA**		
December	Objects and Classes, Inheritance, Regular Expressions	**DP**	**DP-11**	

			FA-7	Theoretical-6
	6. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows: P(t) = (15000(1+t))/(15+ e) where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval.			Practical-10 Tutorial-02
	Event Driven Programming, GUI Programming. 7. Input initial velocity and acceleration, and plot the following graphs depicting equationsof motion: I. velocity wrt time (v=u+at) II. distance wrt time (s=u*t+0.5*a*t*t) III. distance wrt velocity (s=(v*v-u*u)/2*a)	**FA**		
		TOTAL	99	

Resources :

Books:
1. P. K. Sinha & Priti Sinha , "Computer Fundamentals", BPB Publications, 2007.
2. Dr. Anita Goel, Computer Fundamentals, Pearson Education, 2010.
3. T. Budd, Exploring Python, TMH, 1st Ed, 2011
4. Python Tutorial/Documentation www.python.or 2010
5. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist :
learning with Python , Freely available online.2012
 6. http://docs.python.org/3/tutorial/index.html
7. http://interactivepython.org/courselib/static/pythonds
8. http://www.ibiblio.org/g2swap/byteofpython/read/

B.Sc. Program with Computer Science (GE/DSC)

Semester-III

Paper Title- OS

Paper Code- CMSGCOR03T

Credits-4

COURSE OUTCOME: -
After completion of this course the students will be able –

CO1 . Understand the basics of operating systems like kernel, shell, types and views of operating systems

CO2 . Describe the various CPU scheduling algorithms and remove deadlocks.

CO3 . Explain various memory management techniques and concept of thrashing

CO4 . Recognize file system interface, security mechanisms and protection .

CO5 . Use disk management and disk scheduling algorithms for better utilization of external memory.

CO6 . Explain the various features of distributed OS like Unix, Linux, windows etc. related algorithms

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
July	**Introduction:** System Software, Resource Abstraction, OS strategies. 1. Usage of following commands: ls, pwd, tty, cat, who, who am I, rm, mkdir, rmdir, touch, cd.	**DP**	**DP-5** **FA-9**	Theoretical-6 Practical-6 Tutorial-02
	Types of operating systems - Multiprogramming, Batch, Time Sharing, Single user and Multiuser, Process Control & Real Time Systems.	**FA**		

	2. Usage of following commands: cal, cat(append), cat(concatenate), mv, cp, man, date. 3. Usage of following commands: chmod, grep, tput (clear, highlight), bc. 4. Write a shell script to check if the number entered at the command line is prime or not.			
August	**Operating System Organization**: Factors in operating system design, basic OS functions, 5. Write a shell script to modify "cal" command to display calendars of the specified months.	**DP**		Theoretical-10 Practical-8 Tutorial-02
	implementation consideration; process modes, methods of requesting system services – system calls and system programs. 6. Write a shell script to modify "cal" command to display calendars of the specified range of months. 7. Write a shell script to accept a login name. If not a valid login name display message – "Entered login name is invalid". 8. Write a shell script to display date in the mm/dd/yy format.	**FA**	**DP-7** **FA-13**	
September	**Process Management :** System view of the process and resources, initiating the OS, processaddress space, process abstraction 9. Write a shell script to display on the screen sorted output of "who" command along with the total number of users.	**DP**	**DP-7** **FA-13**	Theoretical-10 Practical-8 Tutorial-02

		FA		
	resource abstraction, process hierarchy, Thread model			
	10. Write a shell script to display the multiplication table any number, 11. Write a shell script to compare two files and if found equal asks the user to delete the duplicate file. 12. Write a shell script to find the sum of digits of a given number.			
October November	Scheduling Mechanisms, Strategy selection, non-pre-emptive . 13. Write a shell script to merge the contents of three files, sort the contents and then display them page by page.	**DP**		Theoretical-10 Practical-10 Tutorial-02
	Scheduling pre-emptive strategies. 14. Write a shell script to find the LCD(least common divisor) of two numbers. 15. Write a shell script to perform the tasks of basic calculator. 16. Write a shell script to find the power of a given number.		**DP-7** **FA-15**	
	17. Write a shell script to find the factorial of a given number. 18. Write a shell script to check whether the number is Armstrong or not.	**FA**		

December	Memory Management: Mapping address space to memory space, memory allocation strategies,			Theoretical- 8 Practical-8 Tutorial-02
	19. Write a shell script to check whether the file have all the permissions or not.	DP		
	fixed partition, variable partition, paging, virtual memory What is shell and various type of shell, Various editors present in linux ● Different modes of operation in vi editor ● What is shell script, Writing and executing the shell script ● Shell variable (user defined and system variables) ● System calls, Using system calls ● Pipes and Filters ● Decision making in Shell Scripts (If else, switch), Loops in shell ● Functions ● Utility programs (cut, paste, join, tr , uniq utilities) ● Pattern matching utility (grep) 20. Program to show the pyramid of special character "*".	FA	DP-7 FA-11	
		TOTAL	94	

Resources :

Books:

1. A Silberschatz, P.B. Galvin, G. Gagne, Operating Systems Concepts, 8 th Edition, John Wiley Publications 2008.

2. A.S. Tanenbaum, Modern Operating Systems, 3 rd Edition, Pearson Education 2007.

3. G. Nutt, Operating Systems: A Modern Perspective, 2 nd Edition Pearson Education 1997.

4. W. Stallings, Operating Systems, Internals & Design Principles, 5 th Edition, Prentice Hall of India. 2008.

5. M. Milenkovic, Operating Systems- Concepts and design, Tata McGraw Hill 1992.

B.Sc. Program with Computer Science (**Skill Enhancement Courses**)

Semester-III

Paper Title- **Programming in Python**

Paper Code- **CMSSSEC01M**

Credits-2

COURSE OUTCOME: -
After completion of this course the students will be able –

CO1 . Event Driven Programming in Python Program.

CO2 . To create efficient program using functions to implement reusability.

CO3 . Apply the structures in making application software using GUI Programming.

CO4 . Acquire the skills to write Python database apps.

CO5 . learn Python's Object-Oriented Skills

CO6 . learn to create and package reusable Python modules

MONTH	COURSE/ TOPIC	TEACHER	CLASS HOUR	TUTORIAL
July	**Planning the Computer Program:** Concept of problem solving, Problem definition, Programdesign, Debugging, Types of errors in programming, Documentation.			Theoretical-2 Practical-2
	1. Write a menu driven program to convert the given temperature from Fahrenheit to Celsius and vice versa depending upon users choice. 2. WAP to calculate total marks, percentage and grade of a student. Marks obtained in each of the three subjects are to be input by the user. Assign grades according to the following criteria : Grade A: Percentage >=80 Grade B: Percentage>=70 and <80 Grade C: Percentage>=60 and <70 Grade D:	FA	FA-4	

	Percentage>=40 and <60 Grade 1. Percentage<40 1 Write a menu-driven program, using user-defined functions to find the area of rectangle, square, circle and triangle by accepting suitable input paramters from user.			
August	**Techniques ofProblem Solving:** Flowcharting, decision table, algorithms, Structured programming concepts,Programming methodologies viz. top-down and bottom-up programming. 2 WAP to display the first n terms of Fibonacci series. 3 WAP to find factorial of the given number. 4 WAP to find sum of the following series for n terms: $1 – 2/2! + 3/3!$ - - - - - n/n!	**FA**	**FA-6**	Theoretical-2 Practical-4
September	**Overview of Programming :** Structure of a Python Program, Elements of Python 5 WAP to calculate the sum and product of two compatible matrices *All the programs should be written using user defined functions, wherever possible.* 4. Write a menu-driven program to create mathematical 3D objects I. curve 4. sphere III. cone IV. arrow 1. ring	**FA**	**FA-6**	Theoretical-3 Practical-8 Tutorial-02

	VI. cylinder. 1. WAP to read n integers and display them as a histogram. 2. WAP to display sine, cosine, polynomial and exponential curves			
October November	**Introduction to Python:** Python Interpreter, Using Python as calculator, Python shell, Indentation.Atoms, Identifiers and keywords, Literals, Strings, Operators(Arithmetic operator, Relational operator, Logical or Boolean operator, Assignment, Operator, Ternary operator, Bit wise operator, Increment or Decrement operator).		**FA-7**	Theoretical- 4 Practical-10 Tutorial-02
	4. WAP to calculate the mass m in a chemical reaction. The mass m (in gms) disintegrates according to the formula m=60/(t+2), where t is the time in hours. Sketch a graph for t vs. m, where t>=0.	**FA**		
December	**Creating Python Programs :** Input and Output Statements, Control statements(Branching,Looping, Conditional Statement, Exit function, Difference between break, continue and pass.), Defining Functions, default arguments.			Theoretical- 4 Practical-8 Tutorial-02
	5. A population of 1000 bacteria is introduced into a nutrient medium. The population p grows as follows: P(t) = (15000(1+t))/(15+ *e)* where the time t is measured in hours. WAP to determine the size of the population at given time t and plot a graph for P vs t for the specified time interval. 1. Input initial velocity and acceleration, and plot the following		**FA-5**	

	graphs depicting equations of motion: I. velocity wrt time (v=u+at) II. distance wrt time (s=u*t+0.5*a*t*t) a. distance wrt velocity (s=(v*v-u*u)/2*a) 1. WAP to show a ball bouncing between 2 walls. (Optional)	**FA**		
		TOTAL	28	

Resources :

 Books:

1. T. Budd, Exploring Python, TMH, 1st Ed, 2011
2. Python Tutorial/Documentation www.python.or 2015
3. Allen Downey, Jeffrey Elkner, Chris Meyers , How to think like a computer scientist : learning with Python , Freely available online.2012
4. http://docs.python.org/3/tutorial/index.html
5. http://interactivepython.org/courselib/static/pythonds
6. http://www.ibiblio.org/g2swap/byteofpython/read/