GRAPHIC ERA HILL UNIVERSITY, DEHRADUN

SEMESTER II

Name of Department: - **Computer Science and Engineering**

Subject Code: **TCS 201**

Course Title: **Programming for Problem Solving**

Contact Hours: **L:** 3 **T**: 0 **P**: 0

Examination Duration (Hrs): **Theory** 3 hrs

Relative Weight: **CIE** 25 **MSE** 25 **SEE** 50

Credits: 3

Semester: II

Pre- requisite: **Basic Knowledge of Mathematics and Computer Fundamentals**

Course Outcome:	• Learn and apply concepts of strings and multi-dimensional arrayfor providing solutions to homogenous collection of data types • Propose solution to problem by using tools like algorithm and flowcharts. • Apply the concept of pointers to optimize memory managementby overcoming the limitations of arrays. • Process and analyze problems based on heterogeneous collection of data using structures. • Apply concepts of file handling to implement data storage and retrieval tasks. • Implement the basic real life problems using python

Details of the Course:

Sl. No.	Contents	ContactHours
1	**UNIT- I** Multi-Dimensional Arrays- Initializing arrays , row major and column major form of an array, character strings and arrays, Strings – Declaration of strings, Initialization of strings using arrays and pointers, Standard library functions of string.	6
2	**UNIT- 2** Pointers –Basic of pointers and addresses, Pointers and arrays, Pointer arithmetic, passing pointers to functions, call by reference. Accessing string through pointers.	10

	Dynamic memory management in C - malloc(), calloc(), realloc(), free(), memory leak,Dangling, Void, Null and Wild pointers Structures - Structures, array of structures, structure within structure, union, typedef, self-referential structure, pointer to structure	
3	**UNIT- III** **File Handling** - Opening or creating a file, closing a file, File modes, Reading and writing a text file using getc(), putc(), fprintf() ,fscanf(),fgets(), fputs(), Reading and writing in a binary file, counting lines in a text file, Search in a text file, Random file accessing methods- feof(), fseek(), ftell() and rewind() functions.	8
4	**UNIT- IV** **Introduction to Python-** History of Python, Need of Python Programming, Python features, First Python Program, Running python Scripts, Variables, Reserved words, Lines and indentation, Quotations, Comments, Input output. Data Types, Operators and Expressions: Standard Data Types – Numbers, strings, Boolean, Operators – Arithmetic Operators, comparison Operators, assignment Operators, logical Operators, Bitwise Operators.	10
5	**UNIT- V** Control flow – if, if-elif-else, for, while, break, continue, pass, range(), nested loops. Functions – Handling functions in Puthon File Handling – Reading text file, writing text file, copying one file to another	10
	Total	**44**

Suggested Books:

SL. No.	Name of Authors/Books/Publishers	Edition	Year of Publication /Reprint
	Text Books		
1.	Peter Prinz, Tony Crawford,"C in a Nutshell", Oreilly Publishers,	1st	2011
2.	YashwantKanetkar,"Let Us C",BPB Publication	8th	2007
	Reference Books		
1.	• Steve Oualline, "Practical C programming", Orielly Publishers,2011.	3rd	2011
2.	• Brian W Kernighan, Dennis M Ritcie,"The C Programming Language",Prentice Hall, 1988. R3. Herbert Schildt," C: TheComplete Reference", 4thEdition.TMH, 2000.	2nd	2000
3.	• E.Balagurusamy,"Programming in ANSI C", McGraw Hill	6th	2015