RKUNIVERSITY

SYLLABUS

Course Title	Fundamentals of Computer Programming
Course Code	CE105
Course Credit	Theory : 03
	Practical : 01
	Tutorial : 00
	Credits : 04

Course Learning Outcomes

On the completion of the course, students will be able to:

- **Understand** fundamental concepts with broad perspective of programming.
- **Write** programs in a structured style considering various programming constructs.
- **Compile, execute** and **debug** the programs.
- **Design** flow chart and algorithms for various fundamental concepts.
- **Develop** the solution into modules at the user-defined function level.
- **Utilize** and **evaluate**various concepts of programming.

Detailed Syllabus

Sr. No.	Name of chapter & details	Hours Allotted
	Section – I	
1	**Introduction to programming** Program, Compiler and Interpreter, types of programming languages, Flow charts and Algorithms.	04
2	**Fundamentals of 'C'** Features of C language, structure of C program, comments, header files, data types, constants and variables, operators, expressions, evaluation of expressions, type conversion, precedence and associativity, I/O functions.	06
3	**Control structure in 'C'** Simple statements, Decision making statements: If, else and switch..case, Looping statements: for, while, do..while, fixed and variable count loop, Nesting of control and looping statements, break and continue statement, goto statement.	08

4	**Array** Concept of array, declaration and initialization of one dimensional and two dimensional array, accessing array elements and other operation, internal storage representation of array, variable length array, multi-dimensional array.	**06**
	Section – II	
7	**String** One dimensional character array, declaration of string, string initialization, printing string, character manipulation in string, string manipulation.	**04**
8	**Functions** Concept of user defined functions, prototype, definition of function, parameters, parameter passing, calling a function, recursive function, passing Arrays to function, preprocessor directives	**05**
9	**Pointers** Basics of pointers, declaration and initialization of pointer, void pointer, null pointer, pointer arithmetic, pointer to pointer, pointer and array, pointer to array, array of pointers, function returning a pointer.	**05**
10	**Structure and Union** Basics of structure, structure members, accessing structure members, nested structures, array of structures, structure and functions, structures and pointers, unions, bit-fields.	**05**
11	**File Management** Introduction to file management, Simple file management function for text files, reading from and writing to files.	**05**

Instructional Method and Pedagogy:

- Detail discussion of all topics is not required in class, major focus is to be "Hands on".
- Assignments based on course contents will be given to the students at the end of each unit/topic and will be evaluated at regular interval
- Lectures will be conducted in audio-visual class room to discuss important concepts with the help of programs and PPTs effectively.
- Problems based on concepts learnt in each unit/topic will be given followed by discussion to improve problem solving skills.
- Term work will be given such that students can apply their own logic to develop programs.

Reference Books
• E. Balagurusamy, Programming in ANSI C, fourth Edition, McGraw-Hill Publication, 2011. • Herbert Schildt, C: The complete Reference, McGraw-Hill Publication, 2000. • PradipDey and Manas Ghosh, Computer Fundamentals and Programming In C, 2006.
Additional Resources
▪ N.P.T.E.L. Video Lecture Series of C Programming of Computer Science and Engineering by Dr. P.P.Chakraborty, IIT Kharagpur. [Available at: http://nptel.ac.in/courses/106105085/]

List of Experiments

Problem-1

Mr. Khan wants to travel from Rajkot to surat. **Solve**Mr. Khan's problem of selecting best optionwhich saves his time as well as money.He has three options.

1. Travel by Car speed 60 Kmph, per kilometer charges Rs. 6.5/-
2. Travel by Bus, speed 50 Kmph, Per Kilometer charges Rs. 3.5/-
3. Travel by railway, speed 70 Kmph, Per Kilometer charges Rs. 4.5/-

Problem-2

Write an application to **Calculate** electricity bill as per following specifications.

Domestic		**Non-Domestic**	
Range	**Unit per charge**	**Range**	**Unit per charge**
0-200	1.5	0-100	2.5
201-400	200 + 2.3	101-200	100 + 3.2
401-600	420 + 3.8	201- 300	200 + 3.8
601 and Above	500 + 4.2	301 and Above	300 + 4.2

Also consider service tax of 12.5% on total amount.

Problem-3

ABC Pvt.Ltd. have 10 employees. Their salary details are as follow:

Sr.No.	**Designation**	**Number of Employees**	**Basic**	**DA**	**HRA**	**IT slab**
1.	Peon	3	Rs. 3,000/-	80%	5%	10%
2.	Clerk	4	Rs. 7,000/-	80%	5%	10%
3.	Manager	2	Rs.	80%	10%	15%

			10,000/-			
4.	Sr. Manager	1	Rs. 12,000/-	80%	10%	15%

Createa Program to**calculate**gross salary and net salary of ABC Pvt. Ltd.

Problem-4

To**design and create**an application to read student id and marks from user and **perform** the following operations

1. Print the list
2. **Compare** and Delete duplicates from the list
3. Reverse the list

Find mean of marks by using two dimensional array.

Problem-5

Create a structure with following fields:

1. Candidate id
2. Candidate Name
3. Candidate City

Find particular candidate information using search algorithm. If found, display candidate's information.Else display the message "Element not found in the list".

Problem-6

Develop a C Program for Problem number 5 using pointer.

Problem-7

Create a menu driven in C Program to create file "STUDENT_DATA.TXT" containing following information for every student.

1. Student Id
2. Student Fist Name
3. Student Last Name
4. Student Gender
5. Semester
6. Division

Perform following operations. Use User defined functions wherever suitable.

- Enter details
- Display Details
- Search for a particular student based on ID.
- Delete record of a student
- Edit Record of a student.
- Create a sorted list of students of a particular semester. Store the list in a separate file.