

Fr. Conceicao Rodrigues College Of Engineering

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Department of Information Technology

F.E. (IT) (semester II) (2018-2019)

Lesson Plan

Subject: Structured Programming Approach (SPA)-FEC205

Credits-5

Detail Syllabus

Unit No	Unit	Number of Hours
1	Problem definition	02
2	Algorithms	
2.1	Developing Algorithms	05
2.2	Efficiency of Algorithms	01
3	Expressing Algorithm – Sequence	
3.1	Expressions in C; Arithmetic and Boolean expressions	03
3.2	Use of Standard functions	01
3.3	Assignment statement	01
3.4	Input and output	02
4	Concept of scalar Data Types	04
4.1	scalar data types in C , Scope and life time, type conversion	
5	Expressing Algorithms – Iteration	
5.1	Ordering a solution in a loop	02
5.2	C- Control structures for Iteration	06
6	Expressing Algorithms – Selection	01
6.1	C-Control structures for selection	02
7	Decomposition of solution	01
7.1	Defining Functions in C	02
7.2	Functions and parameters	02
7.3	Introduction to recursive functions	02
8	Additional C data types	
8.1	Arrays – single and multi dimensional	03
8.2	Strings	02
8.3	Structures	02
8.3	Files	02
8.4	Pointers	02

Course Outcome Statement

Course Outcome	Course Outcome Statement
FEC205.1	Explain the fundamental concepts of C programming.
FEC205.2	Illustrate and implement basic constructs of C.
FEC205.3	Apply the concept of functions to solve a problem.
FEC205.4	Demonstrate the use of derived data types in C.

CO-PO and CO-PSO Mapping

Course Name	PO1	PO2	PO3	PO4	PO5	PO6	PO7	PO8	PO9	PO10	PO11	PO12	PSO1	PSO2
FEC205.1	3												3	
FEC205.2	3	1	1										3	
FEC205.3	3	1	1										3	
FEC205.4	3	1	1										3	

CO Assessment Tools

	Direct Methods							Indirect Methods	
	Term Test	Laboratory	Quiz	Mock Test	University (Theory)	University (Practical)			Course Exit Survey
FEC205.1	20%	10%	20%	----	30%	20%			100%
FEC205.2	20%	30%	--	20%	20%	10%			100%
FEC205.3	20%	30%	--	20%	20%	10%			100%
FEC205.4	20%	30%	--	20%	20%	10%			100%

Laboratory Plan:

Week No.	Session No.	Topic	CO mapping	Planned date	Actual Date	Content Delivery Method/Learning Activities
1 st Week	1 (Tutorial)	(Note: Teach Algorithm and Flowchart for this set of programs) <ol style="list-style-type: none"> 1. Fahrenheit and Celsius. 2. Gross salary. 3. Sum of three digit nos. 4. Swapping two 		3 th week of Jan		Video/ slides/ chalk board

		nos. 5. A divisible by B using ternary op. 6. Largest of three using ternary. Home Assignment: Write Algorithm and Draw Flowchart for following problem statements 1. Simple Interest 2. Given an integer number in seconds as input, print the equivalent time in hours, minutes and seconds as output (Ex 7322 seconds is equivalent to 2 hrs 2 mins 2 secs) 3. Accept a number and display its equivalent ASCII number.				
	2 (Lab)	Lab experiments: Learning Basic Unix Commands (mkdir, rmdir, gedit, cp, mv, rm, cd, cd..) Exp1 :Gross salary Exp2: Largest of three nos. Using ternary operator	CO1	3 th week of Jan		Lab Experiment
2 nd week	1 (Tutorial)	1. Roots of Quadratic equation 2. Leap year 3. Largest of three nos. using nested if ..else 4. Type of triangle using else if ladder 5. Electricity Bill using if else if ladder 6. Vowels using switch case		4 th week of Jan		slides/ chalk board
	2 (Lab)	Lab experiments: Exp3: Roots of Quadratic	CO2	4 th week of		Lab Experiment

		equation Exp 4:Grades using if else if ladder Exp 5: Calculator using switch		Jan		
3 rd week	1 (T)	<ol style="list-style-type: none"> 1. Factorial using for loop 2. A ^B using for 3. Fibonacci series using for 4. Series: $1 + \frac{1}{3} + \frac{1}{5} + \dots$ 5. Series: $1 - \frac{1}{3} + \frac{1}{5} - \dots$ 6. Series: $1 - \frac{1}{3!} + \frac{1}{3!} - \frac{1}{4!} + \dots$ 		5 th week of Jan		slides/ chalk board
	2 (L)	Lab experiments: Exp 6:Cosine series Exp 7:GCD using Euclid's algorithm using do...while loops Exp 8: A AB ABC	CO2	5 th week of Jan		Lab Experiment
4 th week	1 (T)	Patterns		3 rd week of Feb		slides/ chalk board
	2 (T)	<ol style="list-style-type: none"> 1. Sum of digits of a number 2. Reversing a number 3. Armstrong number 4. Binary to Dec 5. Dec to Binary 6. nPr and nCr 		3 rd week of Feb		Lab Experiment
5 th Week	1 (L)	Exp 9:Diamond pattern Exp 10: Armstrong nos. from 1 to 500 Exp 11:Prime nos. from 1 to 50	CO2	4 th week of Feb		Lab Experiment
	2 (L)	Lab Experiments: Mocktest1 (1 hour) Exp 12: nPr and nCr using functions Exp 13: Swapping two nos.	MT1-CO2 (Exp12,Exp13) CO3	4 th week of Feb		Lab Experiment
6 th Week	1 (T)	<ol style="list-style-type: none"> 1. Fibonacci using recursion 2. X^Y using recursion 3. GCD using recursion 		1 st week of March		Slides/ chalk board

		<ol style="list-style-type: none"> 4. Reversing a number using recursion 5. Printing binary form of a decimal no. using recursion (Home Assignment) 6. Maximum of an array 7. Sorting an array using bubble sort 8. Sum of array of size 'n' using recursion 				
	2 (L)	<p>Lab Experiments:</p> <p>Exp 14: Fibonacci using recursion</p> <p>Exp 15: X^Y using recursion</p> <p>Exp 16: Bubble sort</p> <p>Exp 17: Merge two array into a single array</p>	(Exp14,Exp15) CO3, (Exp16) CO4	1 st week of March		Lab Experiment
7 th Week	1 (T)	<ol style="list-style-type: none"> 1. Reversing an array 2. Binary search 3. Clockwise rotation (optional) 4. Sum of each row and column of a matrix 5. Transpose of a matrix 6. Symmetric Matrix 		2 nd week of March		slides/ chalk board
	3 (L)	<p>Lab Experiments:</p> <p>Exp 18: Transpose of a matrix</p> <p>Exp 19: Multiplication of matrix</p>	CO4	2 nd week of March		Lab Experiment
8 th Week	1 (T)	<p>Strings:</p> <ol style="list-style-type: none"> 1. Convert first letter of every word into uppercase 2. String copy without using library functions 3. Returning average of an array by passing array to fun 		3 rd week of March		slides/ chalk board

		4. Reverse a string by passing string to function				
	2 (L)	Lab Experiments: Exp 20:String is Palindrome or not and User defined function to concatenate two strings Exp 21: WAP to find trace and norm of square matrix Exp 22: Addition of two matrices by passing Matrices to function	(Exp 19)-CO4 (Exp 20, Exp 21) - CO3	3 rd week of March		Lab Experiment
9 th Week	1 (T)	1. Printing details of the patients with a given decease using structure. 2. Adding two complex numbers using structure. 3. One program to clear basics of pointer (optional)		4 th week of March		Video/slides/ chalk board
	(L)	Lab Experiments: Exp 23: Sorting an array of employees using structures Exp 24: Reversing an array using pointers	CO4	4 th week of March		Lab Experiment
10 th week	lab	Mock Test2	CO4	1 st week of April		
	(T)	Pointers	CO4	1 st week of April		Video/slides/ chalk board

Lecture Plan

Lecture No.	Topic	Programs to be covered	Actual date	Planned Date	Delivery Mechanism
1	Turing Model, Von Neumann Model, Basics of Positional Number System, Introduction to Operating System and component of an Operating System.		2-1	Jan Week1	Chalk and Board
2	Algorithm & Flowchart		3,4,7 Jan		
3	Character Set, Identifiers and keywords, Data types, Constants, Variables.				

4	Operators -Arithmetic, Relational and logical, Assignment, Unary (++ , --)	<ol style="list-style-type: none"> 1. Sum of two numbers 2. Area of a circle and rectangle 	8,9 Jan	Jan Week 2
5	Operatpors: Conditional, Bitwise, Comma, other operators.Expression, statements, Preprocessor.		8,9 Jan	Jan Week 2 and 3
6	Library Functions, Data Input and Output – getchar (), putchar (), scanf (), printf (), gets (), puts (), Structure of C program .		11Jan	Jan week 3
7	Branching - If statement, If-else Statement, Multiway decision.	<ol style="list-style-type: none"> 1. Odd even 2. Grade of a student 	15Jan	Jan week 4
8	Switch case	Printing digits in words OR Display days of a week	15Jan	
9	Looping – while , do-while, for	For loop : <ol style="list-style-type: none"> 1. sum of n numbers 2. series : $1+1/2+1/3+....,$ 3. Printing 1 to n numbers in ascending and descending order. 	18Jan	Jan week 5
10	Looping – while , do-while, for	While: <ol style="list-style-type: none"> 1. Counting number of digits 2. 2. GCD Using Dijkstras Do while: <ol style="list-style-type: none"> 1. Add integers till user types 'n' 	22Jan	
11	Nested control structure - Switch statement	<ol style="list-style-type: none"> 1. Start pattern (Simple triangle), 2. Multiplication tables 	27jan, 2Feb	
12	Continue statement, Break statement, Goto statement.	<ol style="list-style-type: none"> 1. One program for continue 2. Prime number using break 	23Jan	
13	Function -Introduction of Function, Function Main, Defining a Function, Accessing a Function, Function Prototype,	Sum of two numbers or largest of three numbers.	3,25 Feb	Feb week 3
14	Passing Arguments to a Function,	Swap (call by value, call by reference)	25Feb	
15	Recursion, Storage Classes –Auto , Extern , Static, Register	Sum and Factorial of n numbers using recursion	19March	

16	Array-Concepts, Declaration, Definition, Accessing array element.	Standard deviation	1 March	Feb week 4
17	One-dimensional	Linear search OR max of 'n' numbers	1,5March	
18	Multidimensional array	Reading and writing 2D arrays	1 March	
19	Basic of String, Functions in String.h	Length of string, Counting frequency of a character	8 March	March Week 1 and 2
20	Array of String , functions and strings	Searching a name in the list	8 March	
21	Structure: Declaration, Initialization ,	Addition of two complex numbers. Reading and displaying Employee details	25 March	March week 2
22	structure within structure, Operation on structures		25 March	
23	Array of Structure. 4 Union - Definition , Difference between structure and union , Operations on a union	Display all the details of Players, one program on Union	26 March	March week 3
24	Introduction, Definition and uses of Pointers, Address Operator, Pointer Variables, Dereferencing Pointer, Void Pointer, Pointer Arithmetic	Traversing an array using pointers.	1 April	March week 4
25	Pointers to Pointers, Pointers and Array, Passing Arrays to Function, Pointers and Function	Concatenating two strings using pointers, Returning an average of integer array using function and pointers	1 April	
26	Pointers and two dimensional Array, Array of Pointers, Dynamic Memory Allocation.	Sum of matrix using pointers. One simple program for array of pointers	1 April	April Week 1
27	Types of File, File operation- Opening, Closing, Creating, Reading, and Processing File.	Reading and writing to the file	27 March	