Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	Tut.	Pract.	Total
FEC205	C Programming	2	--	--	2	--	--	2

Course Code	Course Name	Examination Scheme							
		Theory					Term Work	Pract. /oral	Total
		Internal Assessment			End Sem. Exam.	Exam. Duration (in Hrs)			
		Test1	Test 2	Avg.					
FEC205	C Programming	15	15	15	60	2	--	--	75

Objectives

To provide exposure to problem-solving by developing an algorithm, flowchart and implement the logic using C programming language.

Outcomes: Learner will be able to…

1. Formulate simple algorithms for arithmetic, logical problems and translate them to programs in C language
2. Implement, test and execute programs comprising of control structures.
3. Decompose a problem into functions and synthesize a complete program.
4. Demonstrate the use of arrays, strings and structures in C language.
5. Understand the concept of pointers

Module	Detailed Contents	Hrs.
1	**Introduction** • Introduction to components of a Computer System • Introduction to Algorithm and Flowchart **Fundamentals of C Programming** • Keywords, Identifiers, Constants and Variables • Data types in C • Operators in C • Basic Input and Output Operations • Expressions and Precedence of Operators • In-built Functions	5
2	**Control Structures** • Introduction to Control Structures **Branching and looping structures** • If statement, If-else statement, Nested if-else, else-if Ladder • Switch statement • For loop, While loop, Do while loop • break and continue	7
3	**Functions** • Introduction to functions • Function prototype, Function definition, Accessing a function and parameter passing. • Recursion.	4
4	**Arrays and Strings**	4

	• Introduction to Arrays • Declaration and initialization of one dimensional and two-dimensional arrays. • Definition and initialization of String • String functions	
5	**Structure and Union** • Concept of Structure and Union • Declaration and Initialization of structure and union • Nested structures • Array of Structures • Passing structure to functions	4
6	**Pointers** • Fundamentals of pointers • Declaration, initialization and dereferencing of pointers • Operations on Pointers • Concept of dynamic memory allocation	4

Assessment:

Internal Assessment Test:

Assessment consists of two class tests of 15 marks each. The first class test is to be conducted when approx. 40% syllabus is completed and second class test when additional 35% syllabus is completed. Duration of each test shall be one hour.

End Semester Theory Examination:

1. Question paper will comprise of total 06 questions, each carrying 15marks.
2. Total 04 questions need to besolved.
3. Question No: 01 will be compulsory and based on entire syllabus wherein sub-questions of 2 to 5 marks will beasked.
4. Remaining questions will be mixed in nature.(e.g. Suppose Q.2 has part (a) from module3 then part (b) will be from any module other than module 3)
5. In question paper weightage of each module will be proportional to number of respective lecture hrs as mentioned in thesyllabus.

Text Books:

1. E. Balaguruswamy, Programming in ANSI C, McGraw-Hill
2. Kernighan , Ritchie, "The C programming Language", Prentice Hall of India
3. Sumitabha Das, Computer Fundamentals and C Programming, McGraw-Hill
4. Pradeep Day and ManasGosh ,"Programming in C", Oxford University Press.

References:

1. Byron Gottfried, "Programing with C", McGraw Hill (Schaum"s outline series)
2. Venugopal K.R, Prasad Sudeep, "Mastering C", McGraw-Hill
3. KanetkarYashwant," "Let Us C", BPB Publication.

Course Code	Course Name	Teaching Scheme (Contact Hours)			Credits Assigned			
		Theory	Pract.	Tut.	Theory	TW/Pract	Tut.	Total
ECC401	Engineering Mathematics-IV	03	-	01*	03	-	01	04

Course Code	Course Name	Examination Scheme							
		Theory				Exam Dura-tion (in Hrs.)	Term Work	Pract & Oral	Total
		Internal Assessment			End Sem exam				
		Test1	Test2	Avg. of Test 1 & 2					
ECC401	Engineering Mathematics-IV	20	20	20	80	03	25	-	125

*** Should be conducted batch wise.**

Pre-requisite:

1. FEC101-Engineering Mathematics-I
2. FEC201-Engineering Mathematics-II
3. ECC301-Engineering Mathematics-III & Binomial Distribution.

Course Objectives: The course is aimed:

1. To understand line and contour integrals and expansion of complex valued function in a power series.
2. To understand the basic techniques of statistics for data analysis, Machine learning and AI.
3. To understand probability distributions and expectations.
4. To understand the concepts of vector spaces used in the field of machine learning and engineering problems.
5. To understand the concepts of Quadratic forms and Singular value decomposition.
6. To understand the concepts of Calculus of Variations.

Course Outcomes:

On successful completion of course learner/student will be able to:

1. Use the concepts of Complex Integration for evaluating integrals, computing residues & evaluate various contour integrals.
2. Apply the concept of Correlation and Regression to the engineering problems in data science, machine learning and AI.
3. Apply the concepts of probability and expectation for getting the spread of the data and distribution of probabilities.
4. Apply the concept of vector spaces and orthogonalization process in Engineering Problems.
5. Use the concept of Quadratic forms and Singular value decomposition which are very useful tools in various Engineering applications.
6. Find the extremals of the functional using the concept of Calculus of variation.