

DEPARTMENT OF MATHEMATICS				<i>Certificate Course</i>				
Sem	Course Type	Course Code	Course Title	Credits	Total Contact Hours	CIA	Ext	Total
	Certificate course	21MATC04	Formal Languages	2	30	50	50	100

### Learning Objectives

- To enable the students to understand the basic concept of compiler design.
- Introduce students to the mathematical foundations of the theory of formal languages and grammars.
- Identify different formal languages and their relationships.

### Learning out comes

- Acquire a fundamental understanding the concepts in formal languages.
- Able to design grammars and different language classes.
- Apply rigorous formal mathematical methods to prove properties of languages and grammars.
- Understand the situation and solve those problems in terms of skills.

### UNIT - I:

Introduction –Alphabet-strings-Languages-Phrase structure language-Context sensitive language-Problems.

### UNIT - II:

Definition of context free language-Definition of Regular languages and regular grammar-Simple problems.

### UNIT – III:

Closure operations-Normal forms lemmas-The families of PSL,CSL,CFL and RL are closed under union, product, star and reflection.

### UNIT - IV:

Definition of Homomorphism- $\epsilon$  – free homomorphism-The family of CFL is closed under substitution, homomorphism, inverse homomorphism, and not closed intersection and simple problems.

### UNIT - V:

Properties of context free language-Generationtrees-Ambiguity in CFL-Definition of Ambiguous Grammar-simple problems.

### TEXT BOOK:

Formal languages and Automata by Dr.Ranisiromoney, Revised edition 1979.

### Reference Books

1. Discrete Mathematics by Schaum’s series(Second Edition)
2. Formal Languages and automata Theory “, K.V.N.Sunitha and N.Kalyani TMH,2010.

### Course Designer

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