

DEPARTMENT OF COMPUTER SCIENCE

Dyal Singh College, University of Delhi

(ACADEMIC SESSION, 2023-24)

Course: B.Sc.(Hons.) Computer Science (Part III/ V Semester)

Paper Code and Name: Theory of Computation (TH)

FACULTY

Name of Teacher: Dr. Sheetal Rajpal

Contact:

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ASSESSMENT DETAILS

Total Marks for the course is 100, comprising following components

- CA-
 - IA -25
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TEACHING PLAN

Week	Topics Covered/ Assignments/ Test/Presentations
1-2	Languages - Basic operations, kleene star, kleene closure Regular Expression - Definition, usage, and building up of expression.
3-4	Finite Automata (FA), Transition Graphs (TG), FA vs TG, Generalized Transition Graphs
5-6	Kleene's Theorem - Union, Concatenation, and Product
7-8	Non-Deterministic Finite Automata, Conversion to Deterministic Finite Automata, Complement and Intersection of Regular Languages
9-10	Pumping Lemma for Regular Languages. Context Free Language (CFL), Context Free Grammar (CFG), Parse Tree
11-12	Pushdown Automata: Deterministic and Non-deterministic. Properties of Context Free Language and Pumping Lemma for CFL
13-14	Turing Machine, its configuration, and computation. Church Turing Thesis
15-16	Universal Turing Machine, Semi-Decidability, Recursively Enumerable and Recursive languages, Halting problem.

DEPARTMENT OF COMPUTER SCIENCE
Dyal Singh College, University of Delhi

(ACADEMIC SESSION, 2023-24)

Course: B.Sc.(Hons.) Computer Science (Part I/ I Semester)
Paper Code and Name: Programming using Python (TH)

FACULTY

Name of Teacher: Dr. Sheetal Rajpal

Contact:

Email: sheetal.rajpal.cs@dsc.du.ac.in

ASSESSMENT DETAILS

Total Marks for the course is 120, comprising following components

- CA-
 - IA -30
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TEACHING PLAN

Week	Topics Covered/ Assignments/ Test/Presentations
1-2	Introduction to Programming Problem solving strategies; Structure of a Python program; Syntax and semantics; Executing simple programs in Python
3-4	Creating Python Programs Identifiers and keywords; Literals, numbers, and strings; Operators; Expressions; Input/output statements; Defining functions
5-6	Default arguments, Control structures -conditional statements, Loop control statements, break, continue and pass, exit function
7-8	Mutable and immutable objects; Strings, built-in functions for string, string traversal, string operators and operations;
9-10	Lists creation, traversal, slicing and splitting operations, passing list to a function;
11-12	Tuples, sets, dictionaries and their operations.
13-14	Object Oriented Programming Introduction to classes, objects and methods; Standard libraries.
15-16	File and Exception Handling File handling through libraries; Errors and exception handling