PG CA S1-05 (DSE)

TWO YEAR MASTER'S DEGREE COURSE

SEMESTER - I

OPEN SOURCE SOFTWARE

MSc IT

Hiranya Chandra Bhuyan School of Science and Technology

KRISHNA KANTA HANDIQUI STATE OPEN UNIVERSITY

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MSc IT

OPEN SOURCE SOFTWARE

DETAILED SYLLABUS

Page Nos.

Unit 1: Installation of LaTeX **7-22**

Installation of LaTeX, Understanding Latex compilation.

Unit 2: Introduction to LaTeX **23-42**

Basic Syntax, Writing equations, Matrix, Tables.

Unit 3: Page Layout – I **43-68**

Page Layout – Titles, Abstract Chapters, Sections, References, Equation references, Citation, Table of contents.

Unit 4: Page Layout – II **69-83**

List making environments, Generating new commands, Figure handling, table & figure numbering, List of figures, List of tables, Generating index.

Unit 5: Packages **84-101**

Packages: Geometry, Hyperref, amsmath, amssymb, algorithms, algorithmic graphic, color, tikz listing.

Unit 6: Classes **102-130**

Classes: article, book, report, beamer, slides, letter.

Unit 7: Applications of LaTex **131-172**

Applications: Writing Resume, Writing question paper, Writing articles/ research papers, Presentation using beamer, inserting graphics, drawing graphics, writing complex equations.

Unit 8: Installation of Scilab **173-181**

Installation of Scilab (both windows & Linux)

Unit 9: Introduction to Scilab **182-191**

Introduction to Scilab, Basic syntax, Mathematical Operators, Predefined constants, Handling .sci files, Installation of additional packages e.g. optimization

Unit 10: Functions in Scilab **192-202**

Built in functions, Complex numbers, Polynomials, Vectors, Matrix operations (functions like inv(), spec(), zeros(), ones(), eye(), rand(). Handling these data structures using built in functions.

Unit 11: Conditional Statements in Scilab **203-217**

Conditional statements (if, select, break, continue); Loops (for & while)

Unit 12: Graphics in Scilab **218-233**

Graphics handling: 2D, 3D, Generating .jpg files, Function plotting, Data plotting, GUI in scillab, Plotting 2D graphs

Unit 13: Applications of Scilab **234-244**

Applications: Numerical Linear Algebra (Solving linear equations, eigen values atc.) solving Ordinary Differential Equations, Numerical Analysis – iterative methods, Comparison with C/ C++/Matlab

Unit 14: Introduction to Python **245-252**

Introduction to Python, Procedure to install Python, How to open Python console

Unit 15: Basic Python Commands **253-269**

Basic Python commands, Python programming

COURSE INTRODUCTION

Open-source software (OSS) is a type of computer software in which source code is released under a license where the copyright holder grants users the rights to study, change, and distribute the software to anyone and for any purpose. This course introduces learners to three open source softwares - LaTeX, Scilab and Python. LaTeX is a high-quality typesetting system which includes features designed for the production of technical and scientific documentation. Scilab is a open source software that includes numerical computational package and has a high-level, numerically oriented programming language. Python is an interpreted, high-level, general-purpose programming language which has its applications in areas like image processing, machine learning etc.

Each unit includes some along-side boxes to help you know some of the difficult, unseen terms. Some “EXERCISES” have been included to help you apply your own thoughts. You may find some boxes marked with: “LET US KNOW”. These boxes will provide you with some additional interesting and relevant information. Again, you will get “CHECK YOUR PROGRESS” questions. These have been designed for you to self-check your progress of study. It will be helpful for you if you solve the problems put in these boxes immediately after you go through the sections of the units and then match your answers with “ANSWERS TO CHECK YOUR PROGRESS” given at the end of each unit.