MASTER DIPLOMA IN SOFTWARE ENGINEERING ('A' LEVEL)

DURATION: 30 MONTHS

A1-R5 : IT Tools & Network Basics

- Introduction to computers
- Introduction to Operating System
- Word Processing using Ms-Word
- Spreadsheet Using Ms-Excel
- Presentations Using Ms-PowerPoint
- Introduction to Internet, WWW and Web
- Email, Social Networking and e-Governance Services
- Digital Financial Tools and Applications
- Overview on Futuristic IT Technology and Cyber Security

A2-R5 : Web Designing & Publishing

- Introduction to Web Design, HTML Basics
- Cascading Style Sheet
- CSS Framework
- JavaScript and Angular JS
- Photo Editor
- Web Publishing and Browsing

A3-R5 : Computer Organization and Operating System

- Basic Structure of Computers
- Computer Arithmetic Operations
- Central Processing Unit and Instructions
- Memory Organization
- I/O Organization
- Operating System Overview
- Linux Basics
- Process Management and Shell Script
- Users, Group and Permissions
- Standard I/O and Pipes
- Finding and Processing Files
- Glossary
- Set of Solved and Unsolved Sample Papers

A4-R5 : Data Structure Though Object Oriented Programming Language

- Object Oriented Concepts
- Basics of C++, Classes and Objects
- Analysis of Algorithm
- Searching and Sorting: Searching

- Elementary Data Structures
- Stacks and Queues
- Trees
- Graphs

A5-R5 : Programming and Problem Solving through Python

- Introduction to Programming
- Flowcharts & Algorithm to Solve Problem
- Introduction to Python
- Operators, Expressions and Python Statements
- Conditional and Iterative Statements
- Strings in Python
- List Manipulation
- Tuples
- Dictionaries
- Functions
- File Processing
- Scope and Module
- NumPy Basics
- Important Definitions and Terminologies

A6-R5 : Internet of Things and its Applications

- Introduction to IoT
- Things and Connections
- Sensors, Actuation and Microcontrollers
- Building IoT Applications
- Security and Future of IoT Ecosystem
- Soft skills-Personality Development

A7-R5 : Database Technologies

- An overview of DBMS
- Architecture of database management system
- Relational database management systems (RDBMS)
- Database design
- MariaDB
- NoSQL databases technologies – MongoDB
- Selecting the right database
- Appendix, Glossary

A8-R5 : Systems Analysis, Design and Testing

- Introduction to system
- Requirement gathering and feasibility analysis
- Structured design
- Object-oriented modelling using uml
- Testing, system implementation and maintenance

- **Other software development approaches**
- **E-commerce**
- **Security aspects of computer system**
- **Appendix**
- **Glossary**

Choose One Specialized Area of Two Modules

A9.1-R5 : Big Data Analytics using Hadoop
A10.1-R5 : Data Science using Python

A9.2-R5 : Web Application using PHP
A10.2-R5: Full Stack Web Application using MVC

A9.3-R5 : Network Management
A10.3-R5: Information Security Management

A9.4-R5 :Internet of Things (IoT):A Practical Approach
A10.4-R5: Internet of Things (IoT) using Raspberry Pi

A9.5-R5 :Artificial Intelligence Concepts and R Programming
A10.5-R5: Machine Learning Using Python