MSDP 101: Advance Spreadsheet Tools   **Total Hours: 30**

Learning Objective: This course is:

- To enable the students to use Excel for advanced data analysis
- To equip the students to with automation skills on Excel
- To enable the students to use Excel for informed decision making.

Learning Outcomes:

- By studying the course, students will be able to make meaningful representation of data in the form of chart and pivot tables.
- By studying the course, students will be able to draw analysis on data using spreadsheets and use interpretation to make decisions.
- By studying this course, students will be able to generate word documents with appropriate formatting, layouts, and proofing.
- By studying this course, students will be able to manage data for generating queries, forms and reports in a database.

Syllabus:

Unit I: Excel Advanced Techniques: **8 Hours**

Templates, Efficiency, and Risk (Standard Deviation, Variance, and Coefficient of Variation), Data Validation; *Functions and Power functions, Array Formulae (Frequency Distribution, mode.mult, mode.sngi), Tables, Advanced Range Names, What-if-analysis: Goal-seek, Data tables, and Scenario Manager, Data analysis ToolPak: Descriptive Statistics, Moving averages, Histogram, Covariance, correlation, and Regression analysis (only for projection); solver add in. Problem Solving using Solver (optimal product mix, workforce scheduling, transportation, capital budgeting, financial planning). Integrating Excel with other tools: MS word, outlook, PowerPoint, Access, Power BI.

Unit II: Excel Interactivity and Automation: **8 Hours**

Index and Match, Offset, Dynamic Charting, Database functions, Text functions, and Error functions: IfError, IsError, Aggregate, Circular Reference, Formula Auditing, Floating-Point Errors, Form Controls (Button, Combo, Check box, Spinner, List, Option), Visual Basic (only basic). Recording Macros, Absolute and relative macros, editing macros, Use of spinner buttons and command buttons; Sub Procedure, Function Procedure (creating New Functions); Working with Loops: Do_while loop, For_Next loop; Creating User Forms: Message Box, Input Box; If Then_Else.

Unit III: Introduction to VBA: **7 Hours**

Conditional Formatting, Charts that Inspire (Waterfall, Column, Line, Combo, Thermometer, Scatter, Histogram) Sheers, Sparklines, Graphics Tricks and Techniques, Worksheet Automation using Macros:

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Absolute and relative macros, editing macros, creating new functions using macros, Use of spinner buttons and command buttons.
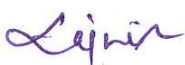
Unit IV: Data Analysis and Decision-Making: **7 Hours**

Working with External Data, Advanced Uses of PivotTables, PowerPivot, Reporting with PowerPivot, Power query, Dashboard, Creating a spreadsheet in the area of: Loan and Lease statement, Ratio Analysis; Payroll Accounting; Capital Budgeting (NPV & IRR), Portfolio Management, Breakeven analysis, and Sensitivity analysis; Operations Management: Constraint, Forecasting & Trend Analysis optimization, Assignment Problems; Depreciation Accounting (Single Method); Graphical representation of data; Frequency distribution and its statistical parameters; Correlation and Regression Analysis.

Text & References:

- Excel 2016 Power Programming with VBA, Michael Alexander, Dick Kusleika, Wiley.
- Financial Analysis and Modelling Using Excel and VBA, Chandan Sengupta, Second Edition, Wiley Student Edition.
- MS Excel 2016, Data Analysis & Business Modelling, Wayne Winston, PHI.

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