INTRODUCTION
TO
DATA MANAGEMENT
(INT217)

Lecture #0

Course Overview

L T P :

2	0	2

Reference Books:

1. FUNDAMENTALS OF BUSINESS ANALYTICS by R.N. PRASAD, SEEMA ACHARYA, WILEY
2. EXCEL HACKS,2/ED TIPS & TOOLS FOR STREAMLINING YOUR SPREADSHEETS by DAVID, SHROFF/O'REILLY

Marks Breakup

- Credits : 3
- Marks Breakup:

Activity	Marks
Attendance	5
Continuous Assessment	45
End-Term Practical (ETP)	50
Total	**100**

- 2 CAs, CA1-30 marks and CA2(Project)- 100 marks
- * No MTE

CA Details

- CA1 : BYOD PRACTICAL

  3 scenario- based questions in fraction of 10 marks each.

- CA2 : SKILL-BASED ASSESSMENT

A) Problem Statement (Objectives) and Dataset *(15 Marks)*

1. Problem Statement *(10 Marks)*
2. Dataset *(5 Marks)*

B) Implementation (Outcome), Report, and Viva *(70 Marks)*

1. Implementation *(40 Marks)*

   a) EDA and Data Pre-Processing *(10 Marks)*

b) Visualization *(10 Marks)*

c) Dashboard *(10 Marks)*

d) Creativity and Innovation *(10 Marks)*

2. Report *(10 Marks)*

a) Format *(5 Marks)*

b) Technical Writing *(5 Marks)*

3. Viva *(20 Marks)*

C) LinkedIn Engagement *(15 Marks)*

1. Likes *(10 Marks)*

2. Comments *(5 Marks)*

WHY Data Management Using Excel????

Data Management using Excel

- Excel is widely used across industries for data analysis.
- It is a powerful tool utilized by businesses in daily operations.
- The course aims to provide a working knowledge of Excel.
- It prepares learners to apply Excel to advanced topics in Business Statistics later.

…contd

The course is designed keeping in mind two kinds of learners –

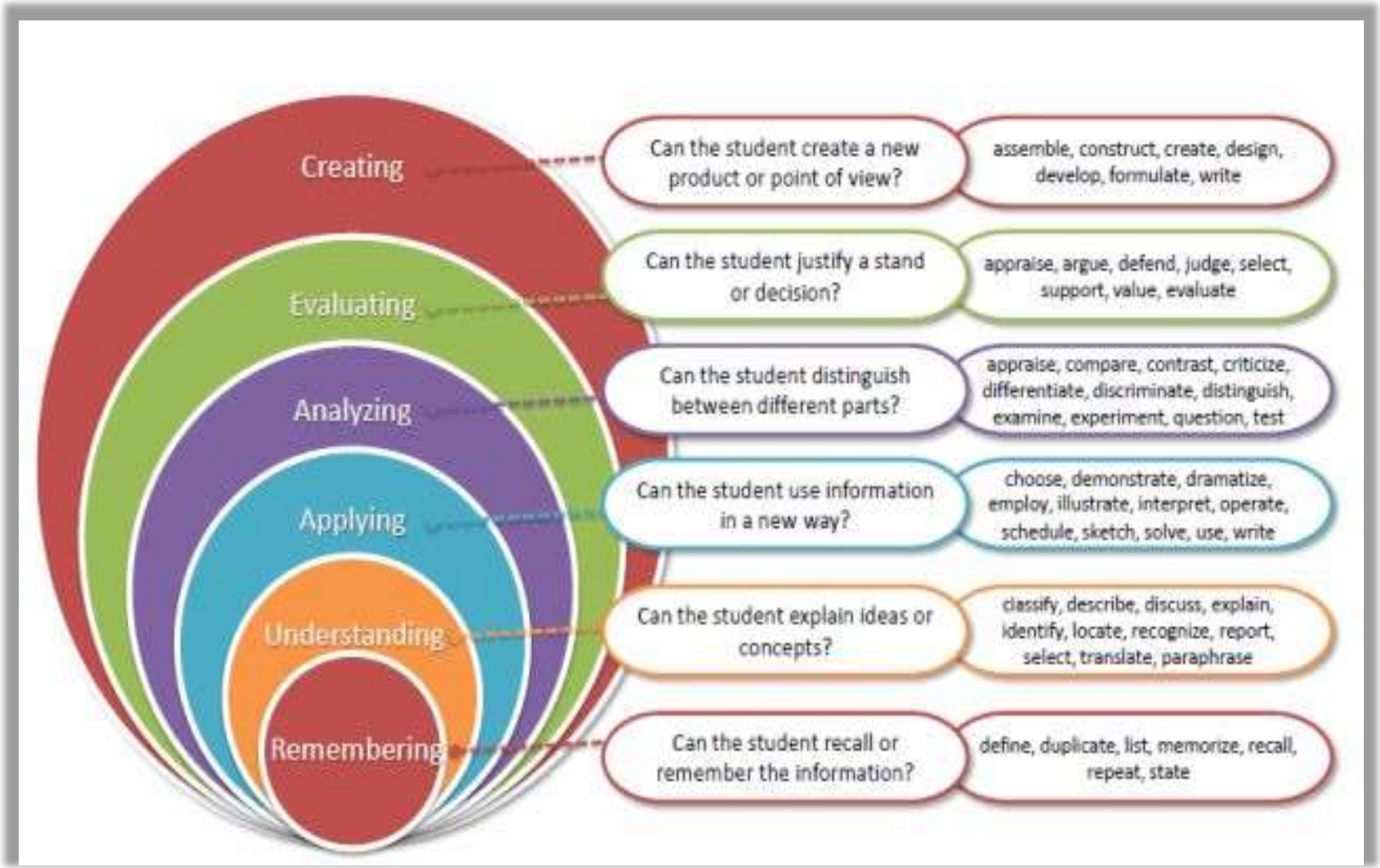
✔Those who have very little functional knowledge of Excel and

✔Those who use Excel regularly but at a peripheral level and wish to enhance their skills.

The course takes you from basic operations such as:

- reading data into excel using various data formats
- organizing and manipulating data
- to some of the more advanced functionality of Excel

Revised Bloom's Taxonomy



What are Cohorts

A group of students of a common programme who intend to attain **similar characteristics** by means of learning **similar skills** in order to target a particular career opportunity.

Purpose of Cohorts

- Student shall be able to have a goal oriented approach for his/her career
- Student identifies the goal in the very first year
- Student shall be able to follow the stage wise career progression.
- Early identification of skill set required for selected goal.

Outline Cohort's:

- Cohort 1: Software Development (Product Based)
- Cohort 2: Data Science
- Cohort 3: Cyber Security
- Cohort 4: Full Stack Web Development
- Cohort 5: Machine Learning
- Cohort 6: Cloud Computing
- Cohort 7: Software Methodologies And Testing
- Cohort 8: Software Development (Service Based)
- Cohort 9: Entrepreneurship
- Cohort 10: Mobile Application Development
- Cohort 11: Government jobs/Higher studies

Cohort 2: Data Science

- **Companies**

10-20 LPA
- Accenture
- Quick Heal
- Informatica
- IBM
- AMDOCs
- Norton

20-30 LPA
- Amazon
- Flipkart
- Deloitte
- HP

Up to 10 LPA
- TCS
- Deloitte
- Quantiphi
- Capgemini

Cohort 2: Data Science

- **Skills Required**

S1 - DATA MANAGEMENT

S2 - DATA VISUALIZATION

S3 - DATA EXPLORATION AND ANALYSIS

S4 - DATA SCIENCE TOOLBOX:PYTHON PROGRAMMING

S5 - PREDICTIVE ANALYTICS

S6– DATA CLASSIFICATION

S7 - DATA ANALYTICS

S8 – PYTHON LANGUAGE

S9 – RECOMMENDER SYSTEMS

S10 - DATA PREDICTION

Cohort 2: Data Science

- **Skills Sources – Internal**

MAIN COURSE

INT306: DATABASE MANAGEMENT SYSTEM[S1]

INT108: PYTHON PROGRAMMING[S8]

ELECTIVE COURSE

INT217: INTRODUCTION TO DATA MANAGEMENT [S1]

INT233: DATA VISUALIZATION[S2,S3]

INT375: DATA SCIENCE TOOLBOX:PYTHON PROGRAMMING[S4]

INT234:PREDICTIVE ANALYTICS [S7,S10,S5]

INT254: FUNDAMENTALS OF MACHINE LEARNING[S6]

Course Outcomes

- CO1::apply the various techniques and functions over spreadsheet for getting various insights of data
- CO2 :: utilize data representation methods like pivot tables and Power Pivoting
- CO3 :: determining the need of the graphical representation in the spreadsheet by using various graphs and charts outline
- CO4 :: apply the various techniques to validate data in the spreadsheet and perform what-if analysis
- CO5 :: employ macros to automate and optimize spreadsheets
- CO6 :: extend the concepts of creating interactive dashboards using slicers, macros and advanced charts

Program Outcomes

PO1. **Engineering knowledge**: Apply the knowledge of mathematics, science, engineering fundamentals, and an engineering specialization to the solution of complex engineering problems.

PO2. **Problem analysis**: Identify, formulate, review research literature, and analyze complex engineering problems reaching substantiated conclusions using first principles of mathematics, natural sciences, and engineering sciences.

PO3. **Design/development of solutions**: Design solutions for complex engineering problems and design system components or processes that meet the specified needs with appropriate consideration for the public health and safety, and the cultural, societal, and environmental considerations.

PO4. **Conduct investigations of complex problems**: Use research-based knowledge and research methods including design of experiments, analysis and interpretation of data, and synthesis of the information to provide valid conclusions.

PO5. **Modern tool usage**: Create, select, and apply appropriate techniques, resources, and modern engineering and IT tools including prediction and modeling to complex engineering activities with an understanding of the limitations.

PO6. **The engineer and society**: Apply reasoning informed by the contextual knowledge to assess societal, health, safety, legal and cultural issues and the consequent responsibilities relevant to the professional engineering practice.

PO7. **Environment and sustainability**: Understand the impact of the professional engineering solutions in societal and environmental contexts, and demonstrate the knowledge of, and need for sustainable development.

PO8. **Ethics**: Apply ethical principles and commit to professional ethics and responsibilities and norms of the engineering practice.

Program Outcomes

PO9. **Individual and team work**: Function effectively as an individual, and as a member or leader in diverse teams, and in multidisciplinary settings.

PO10. **Communication**: Communicate effectively on complex engineering activities with the engineering community and with society at large, such as, being able to comprehend and write effective reports and design documentation, make effective presentations, and give and receive clear instructions.

PO11. **Project management and finance**: Demonstrate knowledge and understanding of the engineering and management principles and apply these to one's own work, as a member and leader in a team, to manage projects and in multidisciplinary environments.

PO12. Life-long learning: Recognize the need for, and have the preparation and ability to engage in independent and life-long learning in the broadest context of technological change.

Why this course is a STAR COURSE

There are several reasons why Excel is considered a star course and can provide good placement opportunities:

- Ubiquitous in the Workplace
- Data Analysis and Visualization
- Time and Cost Savings
- Versatility and Adaptability

Why this course is a STAR COURSE

- Integration with Other Tools
- In-Demand Skill
- Competitive Advantage
- Career Growth Opportunities

Content of Course

Unit 1

Spreadsheet functions to organize data : cell reference styles, creating and working with formulas, text functions, date and time functions, lookup and reference functions, mathematical and statistical functions, information and volatile functions, logical and financial functions, formula auditing, error handling, string functions

Introduction to Microsoft Excel : UI Basics : introduction to UI basics, about excel, workbooks and worksheets, customizing excel, reference styles, number formatting, custom number formatting, conditional formatting, format as table

Unit 2

Data representation and manipulation : filter, advanced filter for complex criterion, sorting and custom sorting, pivot table and pivot chart, power pivot, import data from different sources into power pivot, reducing file size in power pivoting, connect to multiple different external datasets, DAX functions

Unit 3

Advanced graphing and charting : charts, combo charts, working with objects charts, dynamic charts and dynamic data source for charts print areas, views for a worksheet, various printing techniques

Data protection techniques : worksheet protection, protect specific range, workbook protection and encryption

Unit 4

What-if analysis : Goal Seeker, Scenario Manager, Data Table

Data Validation : Understanding the need for Data Validation, creating a Validation List, adding Custom Validation Error, Dynamic Formulas by using Validation Techniques

Unit 5

Macros : Understanding Excel Macros, Activating the Developer Tab in Excel, creating a Macro with the Macro Recorder, creating Buttons to Run Macros

Unit 6

Creating an interactive dashboard : Principles of Dashboarding, mastering charting techniques, Macros for interactive dashboard, Visualizations with Sparklines and Shapes, specialized charts – Waterfall chart, funnel chart, adding maps on dashboard, adding slicers and timelines, connecting slicers with multiple pivot tables, adding hyperlinks to navigate between different sheets

Recent trends: Excel Copilot (AI Assistant): Automating repetitive tasks using Microsoft's Copilot in Excel, Hyper-Automated Dashboards, AI-Powered Add-ins for Excel

Learning Outcomes

- Apply the various techniques and functions over spreadsheet for getting various insides of data
- Understand the data representation methods like pivot table and power pivoting
- Understand the need of the graphical representation in the spreadsheet by using various graphs and charts
- Learn What-if analysis and Data Validation
- Advanced Excel skills like Macros
- Dashboarding skills using advanced chart, slicers, hyperlinks etcetera

Questions???