**Handout - Week 2: Application of Microsoft Excel**

**Foreword: Key Components of Learning:**

1. Assignments: The goal of assignments is to help students get familiar with the real data, gain experience of processing and analyzing clinical data, and learn how to work on hands-on training and work as an analyst.
2. Lecture: The goal of lectures is to help students develop a higher view, finding the values of data and develop a more comprehensive understanding of Excel and data analysis.

**Study Objectives:**

1. Develop proficiency in Microsoft Excel Applications and functions. Knowing the connection between data analysis theory and Microsoft applications.
2. Knowing how to format data. Understand data analysis concepts, such as sorting, filtering, and searching to describe essential parts of data.
3. Develop data summarizing and visualization skills using PivotTable and Charts.
4. Develop problem-solving skills by working with real-world datasets, analyze and interpret data.

**Why do we use excel for data analysis?**

1. Easy to use: Excel has a user-friendly interface and is relatively easy to learn, making it accessible to a wide range of users. It is also convenient to share and edit in interdisciplinary collaborations.
2. Excel can handle a variety of data types, including numbers, text, and dates, and can perform a wide range of data analysis functions.
3. Data visualization: Excel has built-in charting and graphing tools that allow users to visualize their data in a variety of ways, making it easier to identify trends and patterns.
4. Integration with other tools: Excel integrates with a variety of other data analysis tools, such as Power BI and R, allowing users to take their data analysis to the next level.

**Essential Skills for Excel Spreadsheets:**

***[Describing Data]***

1. Entering and editing, and formatting: Being able to accurately and efficiently enter and edit data in Excel is a fundamental skill. This includes being familiar with Excel's cell layout, using keyboard shortcuts for editing data, and understanding how to use copy and paste to duplicate data.
2. Basic formulas and functions: Excel's formula and function features allow users to perform complex calculations on their data with ease. Knowing how to create basic formulas for addition, subtraction, multiplication, and division, and being familiar with common functions like SUM, AVERAGE, and COUNT can make working with data much faster and more efficient.
3. Sorting and filtering data: Excel has built-in features for sorting and filtering data, which can be helpful for organizing and analyzing large datasets. Being able to sort data by a particular column or filter data based on specific criteria can make working with data much easier.

***[Summarizing Data]***

1. Pivot tables: Pivot tables are a powerful Excel feature for summarizing and analyzing large datasets. Being able to create and customize pivot tables and use them to extract insights from complex data sets is a valuable skill for anyone working with data in Excel.
2. Charts and graphs: Excel's charting and graphing tools allow users to visualize their data in a variety of ways. Being able to create basic charts and graphs, customize their appearance, and use chart elements like titles and labels can help users better communicate their data insights.

**Hands-on In-class Training:**

Given a scenario: You are given a copy of the hospital employee table from Human Resources department. You are asked to complete an analysis of the hospital to report the departmental job satisfaction.

**Weekly Assignment:**

This workbook shows the Employee table of a large manufacturing company in United States. The list includes Employee Name, Building, Department, Status (of contract), Hire Date, Years (working in the company), Benefits, Compensation, Job Rating (from 1-star to 5-star score). The description of "Benefits" (Column G) are:

D - Dental and Vision Insurance; M - Medical Insurance; R - Retirement Plan

Your task is to complete the current table named "HR List", and develop a summary table showing Job Ratings by Department.

**In "HR list" worksheet, perform following changes:**

(1) How many employees are eligible for all the benefits "DMR"? Count the number of employees having benefits "DMR" on Column G. Write down your count number on highlighted cell (N15). (Hint: You can use either (1) Find & Select, (2) Filter, or (3)"countif" formula to complete the count.

(2) Use the completed "HR List" table to create a PivotTable on a new worksheet. Rename "Sheet1" to "Job Rating Summary".

(3) In the PivotTable fields pane, add 'Job Rating' field to the Columns area, the 'Department' field to the Rows area, and 'Job Rating' to the Values area.

(4) Select the entire PivotTable and create a 100% Stacked bar chart showing all department names in the bottom and job ratings as columns. Add a title named *Job Ratings by Department*.

(5) Which department do you think has the highest percentage of 5-star job ratings? Why do you think so? Write the department name you think has the best rating and justify your choice. Please write on cell N18 of the "HR List" Worksheet.

**Extra learning materials and Online resources:**

Excel 2016 Essential Training, <https://www.linkedin.com/learning/excel-2016-essential-training>