

Data Analysis and Visualization

Basic Course Information		
Course Number	0005113	Subject Category
Class Format	Lecture	Credit Type and Number of Credits
Department	Computer	Student Category
Period of Study	Semester 2	Classes per Week
Required Materials	Textbooks: Laptop and Tablet, Internet	
Instructor	Saving Him Patel, Dr.	Yali, You-Boyou, Su, Wei-Min

Course Objective
 The course provides students with introduction and basic knowledge of Data Analysis and Visualization. It covers the analysis and visualization of scientific data, basic statistical analysis, data mining techniques, as well the fundamental concepts of machine learning.

Evaluation/Rubric	Minimal Level of Achievement (Poor Score)	Standard Level of Achievement (Good)	Unacceptable Level of Achievement (Fail)
Understanding how to make an environment for R programming and debugging own set.	Demonstrates excellent knowledge and understanding of how to create an environment for R programming and debugging.	Demonstrates good knowledge and understanding of how to create an environment for R programming and debugging.	Lacks the appropriate knowledge and understanding of how to create an environment for R programming and debugging.
Understanding how to analyze and manipulate scientific data of specific problem using R.	Demonstrates excellent knowledge and understanding how to analyze and manipulate scientific data of specific problem using R in the right way.	Demonstrates good knowledge and understanding how to analyze and manipulate scientific data of specific problem using R in the right way.	Lacks the appropriate knowledge and understanding how to analyze and manipulate scientific data of specific problem using R in the right way.
Understanding how to visualize scientific data of specific problem using R.	Demonstrates excellent knowledge and understanding how to visualize scientific data of specific problem using R in the right way.	Demonstrates good knowledge and understanding how to visualize scientific data of specific problem using R in the right way.	Lacks the appropriate knowledge and understanding how to visualize scientific data of specific problem using R in the right way.

- Relationship with Learning Outcomes**
- CI1) Ability to operate and administer the computer software and hardware**
 - CI2) Ability to understand the operating system and to develop software to solve specific problems.**
 - CI3) Ability to apply the latest technology (e.g., artificial intelligence (AI), Big data etc) to build up computer system to support the development of society.**

Teaching Method	
Outline	Lecture and Practice
Class Format	Lectures, Practice, Quiz, Homeworks and Reports
Prerequisites	Students are required to ask any questions after sufficient self-learning.

Semester 2	Contents and Method of Course	Goals	Related MCO		
			V-1	V-2	V-3
1st week	Introduction and Guidance / R basic	Installation and understanding and use R programming	V-1	1	9
2nd week	Data Wrangling	Understand and use Data Wrangling	V-1	1	9
3rd week	Data Wrangling	Understand and use Data Wrangling	V-1	1	9
4th week	Exploratory Data Analysis with data table	Understand and use Exploratory Data Analysis with data table	V-1	1	9
5th week	Data Visualization	Understand and use Data Visualization	V-1	1	9
6th week	Holiday				
7th week	Data Visualization	Understand and use Data Visualization	V-1	1	9
8th week	Mid-term Report	Understand and use some concept of data analysis and visualization	V-1	1	9
9th week	Holiday				
10th week	Mid-term				
Make up class on 10th-Jan-2023	Data Visualization / Statistic with R	Understand and use Data Visualization and Statistic with R	V-1	1	9
11th week	Statistic with R	Understand and use Statistic with R	V-1	1	9
12th week	Statistical Testing Prediction	Understand and use Statistical Testing Prediction	V-1	1	9
13th week	Statistical Testing Prediction	Understand and use Statistical Testing Prediction	V-1	1	9
14th week	Data visualization with dashboards/ Small Project description	Understand the usage of Data visualization with dashboards and Demonstrate a small project related to data analysis and visualization	V-1	1	9
15th week	Small Project	Demonstrate a small project related to data analysis and visualization	V-1	1	9
16th week	Small Project Presentation	Demonstrate a small project related to data analysis and visualization	V-1	1	9
17th week	Holiday				
18th week	Final Report	Understand and use all concept of data analysis and visualization	V-1	1	9
19th week	Final Exam				
20th week	Final Exam				

	Mid Term Report	Final Report	Final Examinations between midterm	Initial	Final	Project
Weighted Average	50	50		50	50	50
Weighted Average						