Week - Topics	2020-21 Fall Term	BOOK Part	BOOK Chapter	BOOK Page	Total Page
1) Data and Code	**23 Oct**	-	-	-	-
2) Linux and Python	**30 Oct**	-	-	-	-
3) Data Sources, Download and NCL	**6 Nov**	-	-	-	-
4) Introduction to R	**13 Nov**	1 – The Language	1 – Getting Started	**3 - 14**	**11**
5) Vectors, Matrices, Array	**20 Nov**	1 – The Language	2, 3 and 4 – Vectors, Matrices, Arrays, Non-Numeric Values	**23 - 36**	**13**
6) Lists, Data Frames	**27 Nov**	1 – The Language	5 and 6 – Lists, Data Frames and Special Values	**89 - 101**	**12**
7) Basic Plotting and Read Data	**4 Dec**	1 – The Language	7 and 8 – Basic Plotting, Reading and Writing Files	**127 - 133, 150 - 155**	**11**
8) Conditional Statements	**11 Dec**	2 – Programming	10 – Conditions and Loops	**179 - 185**	**6**
9) Loops	**18 Dec**	2 – Programming	10 – Conditions and Loops	**193 - 208**	**15**
10) Statistics	**25 Dec**	3 – Statistics and Probbility	13 and 14 – Elementary statistics and Basic Data Visualization	**267 - 275**	**8**
11) New Year	**1 Jan**	-	-	-	-
12) Probability	**8 Jan**	3 – Statistics and Probbility	15 and 16 – Probability and Common Probability Distibutions	**309 - 313**	**4**
13) R Summary	**15 Jan**	-	-	-	-
14) R Advanced, Data Analaysis	**22 Jan**	-	-	-	-
15) R Final Project	**?**	-	-	-	-

Week - Topics	2020-21 Fall Term	QUIZ	Practice	Homework
1) Data and Code	**23 Oct**	-	-	Linux – webminal
2) Linux and Python	**30 Oct**	Linux – Primary Codes	Linux - Basic Training	Linux script, Filezilla
3) Data Sources, Download and NCL	**6 Nov**	-	Filezilla – download and upload	Datacamp: Intro to R
4) Introduction to R	**13 Nov**	R – Class	R – Basic Math	Udemy: Vector, Matrice-Array
5) Vectors, Matrices, Array	**20 Nov**	R – Vectors	R – Indexing Vectors	Udemy: List-Data Frame
6) Lists, Data Frames	**27 Nov**	R – List and Data Frame	R – Indexing Data Frame	Datacamp: import and plot
7) Basic Plotting and Read Data	**4 Dec**	R – read and plot	R – readly and ggplot2	**Mid-Term Project**
8) Conditional Statements	**11 Dec**	-	R – "if" condition	Udemy: Condition and loop
9) Loops	**18 Dec**	R – "if" and "for"	R – "if" and "for" nested	Udemy: Statistics
10) Statistics	**25 Dec**	R – sum, mean and hist	R – Data Summary	Datacamp: corr and reg
11) New Year	**1 Jan**	-	-	-
12) Probability	**8 Jan**	R – Shape and skew	R – Distributions	-
13) R Summary	**15 Jan**	-	R – Practice	Datacamp: dplyr, ggplot2
14) R Advanced, Data Analaysis	**22 Jan**	-	R – Data Analysis	Prepare read your input data
15) R Final Project	**?**	-	**Final Project**	-

Software Tools for Earth & Environmental Sciences – 2020-2021 Fall Term (19 Oct - 22 Jan, Total : 14 Weeks)

1st Week – 23 Oct **Data and Code** • Syllabus • Data • Coding • New Accounts	**2nd Week – 30 Oct** **Linux and Python** • Unix and GNU/Linux • Terminal • vi Editor and Bash Script • Anaconda-Jupyter Python	**3rd Week – 6 Nov** **Data Sources, Download and NCL** • Data Formats • Data Sources • Data Download • NCL, nco, cdo	**4th Week – 13 Nov** **Introduction to R** • Getting Started • Preview of R • Numerics and Arithmetic • Assigment
5th Week – 20 Nov **R, The Language** • Vectors • Matrices • Array • Special Values	**6th Week – 27 Nov** **R, The Language** • Data Frames • List • Attributes	**7th Week – 4 Dec** **R, The Language** • Basic Plotting • ggplot2 • Read – Write File • **Midterm Project**	**8th Week – 11 Dec** **R, Programming** • Comparison Operators • Conditional Statements
9th Week – 18 Dec **R, Programming** • Loops • Other Control Flow Mechanism	**10th Week – 25 Dec** (noel) **R, Statistics** • Elementary Statistics • Basic Data Visualization	**11th Week – 1 Jan** **New Year**	**12th Week – 8 Jan** **R, Probability** • Elementary Probability • Probability Distributions
13th Week – 15 Jan **R, Summary** • Repetition • Practice	**14th Week – 22 Jan** **R, Advance** • Data Analysis • readr, dplyr, tidyr • ggplot2, lattice	**? (25 Jan – 7 Dec 2021)** **R - Final Project Workshop**	

BOOK

Python

- Beginning Python
- Beginning Programming with Python for Dummies
- Introduction to Python Programming
- Python, And Introduction to Programming
- Python Basics, A Self-Teaching Introduction
- Python Crash Course, A Hands-On, Project-Based, Introduction to Programming
- Python for Data Analaysis

R

- **MAIN BOOK**; The Book of R, A First Course in Programming and Statistics
- Efficient R Programming
- Learn R for Applied Statistics
- Learning R
- Practical Data Science with R
- R for Data Science
- R for Dummies
- R for Everyone, Advanced Analysis and Graphics
- R in Action, Data Analaysis and Graphics with R
- (R Official PDF) – An Introduction to R
- The Art of R Programming

Course and Website

Python

- https://www.learnpython.org/
- https://www.anaconda.com/wp-content/uploads/2019/01/2018-08-AnacondaTraining-Visualization-and-Dashboards.pdf
- http://www.data-analysis-in-python.org/
- https://www.udemy.com/
- https://www.datacamp.com/home
- https://courses.edx.org/

R

- http://www.r-tutor.com/r-introduction
- https://www.r-bloggers.com/
- https://cran.r-project.org/
- http://www.datasciencemadesimple.com/r-tutorial/
- https://www.udemy.com/
- https://www.datacamp.com/home
- https://courses.edx.org/
- https://www.rdocumentation.org/
- https://www.datacamp.com/community/tags/r-programming
- https://rmarkdown.rstudio.com/
- https://shiny.rstudio.com/tutorial/
- https://rstudio.cloud/
- https://commonmark.org/help/tutorial/

Homework

1- Online Linux account, and do exersices of 1st and 2nd lessons
https://www.webminal.org/ and click "Terminal"

2- Linux script – go create folder, copy paste move and echo the file
Download Filezilla ; https://filezilla-project.org/

3- Download R and R Studio, setup, create a new project
https://cran.rstudio.com and https://www.rstudio.com
Datacamp – Introduction to R
https://www.datacamp.com/courses/free-introduction-to-r

4- Udemy – Introduction to R, Section 1, 2 and 3 (Part 14 to 21)
https://www.udemy.com/course/introduction-to-r/

5- Udemy – Introduction to R, Section 3 (Part 22-25)
https://www.udemy.com/course/introduction-to-r/

6- Datacamp – Importing Data in R, Part 1
https://www.datacamp.com/courses/importing-data-in-r-part-1
Udemy – Introduction to R Section 4, Importing Data into R
https://www.udemy.com/course/introduction-to-r/
Datacamp – Data visualization in R
https://www.datacamp.com/courses/data-visualization-in-r

7- Udemy – Introduction to R Section 6, Loops and Conditions
https://www.udemy.com/course/introduction-to-r/

8- Udemy – Introduction to R, Section 7, Statistics (Part 49 to 52)
https://www.udemy.com/course/introduction-to-r/

9- Datacamp – Correlation and Regression
https://www.datacamp.com/courses/correlation-and-regression

10- Datacamp – Data Manipulation with dplyr in R
https://www.datacamp.com/courses/data-manipulation-with-dplyr-in-r
Datacamp – Data visualization with ggplot2
https://www.datacamp.com/courses/data-visualization-with-ggplot2-1

11- Prepare your data

Advance;

- Datacamp : Data Visualization in R with lattice
https://www.datacamp.com/courses/data-visualization-in-r-with-lattice
- Udacity : Data Analysis with R
https://www.udacity.com/course/data-analysis-with-r--ud651
- Datacamp : Introduction to Function Writing in R
https://www.datacamp.com/courses/introduction-to-function-writing-in-r
- Datacamp : Developing R Packages
https://www.datacamp.com/courses/developing-r-packages
- Introduction to Data Science with R - Data Analysis Part 1
https://www.youtube.com/watch?v=32o0DnuRjfg

QUIZ

1- Linux – general information and basic codes
2- R – General information, class, operators, basic codes
3- R – Vectors
4- R – List and Data Frame
5- R – reading and plotting the file
6- R – if and for
7- R – sum, mean and hist
8- R – shape and skew

PROJECT

Midterm - R

⇒ Print variables and dimensions
⇒ Choose a parameter
⇒ Manipulating, Indexing and Filtering
⇒ Use dplyr and ggplot2 Package
⇒ Save and mail the script

Final - R

⇒ Prepare your input data
  - txt, csv, nc

⇒ Create a new R project and a new R script
⇒ Install Packages
⇒ Set directory and go to folder
⇒ Open folder and print list of files
⇒ Open file, read and print variables and dimensions
⇒ Convert data types
  - Data frame to list
  - List to vector

⇒ Aplly conditions and loops
  - Indexing
  - Manipulating
  - Filtering

⇒ Data analysis
  - Statically – plot, summary, histogram
  - Probability distribution
  - Time series

⇒ Save the script and mail me

1st Week — Intro - Data and Code (23 Oct)

Goal(s) : General info about Earth Sciences, Data and Coding. Intro to academic tools.

1st-part of Class :

DATA

- **What is the Data**
- **Data Collection and Production**
- **Data Types, Formats and Source**
- **Download and Get the Data**
- **Popular Terms About Data**
  - ⇒ Data Science
  - ⇒ Data Analaysis
  - ⇒ Big Data
  - ⇒ Data Mining
  - ⇒ Data Assimilation and Manipulation

2nd-part of Class :

CODE

- **Operational Systems**
  - ⇒ Unix/Linux
- **Programming Languages**
  - ⇒ C, Fortran, JavaScript, Python, R, NCL
- **Fields of Programming**
- **Interpretation and Visualization**
- **Algorithm, Simulation and Modeling**
- **Popular Terms About Programming**
  - ⇒ Artifical Intelligent
  - ⇒ Machine Learning
  - ⇒ Deep Learning
  - ⇒ Internet of Things

:

NEW ACCOUNTS

- **Github, Researchgate, DOI Code, ORCID, Overleaf(LaTeX)**
- **Mendeley, Panoply, Sublime Text, Filezilla**
- **ArcGIS, QGIS**
- **Anaconda, Cygwin, Jupyter, R Studio, NCL**
- **Meted, Coursera, Udemy, Datacamp, Edx, Khanacademy**
- **Stackoverflow, Wolfram-alpha, dropbox, wetransfer**

Next Week

- TOPIC : Introduction to Linux -Terminal, Vi Editor, Script and Python
- HOMEWORK : webminal.org account, and do exersices of 1st and 2nd lessons
- QUIZ : Linux – general information and basic codes

2nd Week — Introduction to Linux (30 Oct)

1.QUIZ : Linux – general information and basic codes

Goal(s) : General information about Linux, terminal, and Python (Jupyter)

1.HOMEWORK : Linux excersice.

1st-part of Class :

Unix, GNU/Linux and Terminal

- **History**
- **Terminal**
  - ⇒ Root, Folder, File
  - ⇒ Environments, Path
- **Command**
  - ⇒ cd, pwd, ls, mkdir
  - ⇒ cp, rm

Linux – vi Editor and Bash script

- **vi Editor**
  - ⇒ vi command and other editors
- **Print Commands**
  - ⇒ echo, touch
  - ⇒ cat, grep
  - ⇒ head, tail
- **Edit Text**
  - ⇒ insert, esc
  - ⇒ quit, write, delete
- **Script Types**
- **Edit Text**
- **Create, Edit and run**

3rd-hour of Class :

Linux Practice ad Quiz

Python

- **Programming Language**
- **History and Concept of Python**
- **Fields of usage**
- **Anaconda Jupyer**

Reminder : linux.org - for more excersice and examples for linux training

Next Week

- TOPIC : Data Sources and Download, and NCL, nco, cdo
- HOMEWORK : Download Filezilla.

3rd Week — Data Sources, Download and NCL (6 Nov)

Goal(s) : Different formats and sources of data, download. Intro to NCL

2.HOMEWORK : Download Filezilla

1st-part of Class :

DATA SOURCES

- **Data Formation**
- **Dimensions and Types**
  ⇒ txt, doc, ascii, csv, nc, hdf5, grib
- **Data-Websites**
  ⇒ knmi etc.
  ⇒ earthdata Nasa

DATA DOWNLOAD

- **VPN, ssh**
- **http, ftp**
- **wget, curl**
- **Practice :** Filezilla, transfer file (sftp://ssh.itu.edu.tr)
- **Practice :** Download the data with ftp or wget

2nd -part of Class :

NCL

- **Scientific Programming Language**
- **Analysis and Visualization**
- **nco, cdo**
- **Practice :** Check and plot the data file, we've downloaded

Reminder : R Introduction – http://www.r-tutor.com/r-introduction
: The Book of R – The Language, Getting Started (Part 1, Section 1, Pg. 3-14)

Next Week

- TOPIC : Introduction to R – Getting started
- HOMEWORK : R and R Studio download, setup, create a new project and script
  : Datacamp – Introduction to R
- QUIZ : R - general information, operators, math

4th Week — Introduction to R — (13 Nov)

2.QUIZ : R – general information, operators, basic codes

Goal(s) : Terminal and R Studio, intro to language and programming in R

3.HOMEWORK : Datacamp – Intro to R course

1st-part of Class :

R – Getting Started

- **What is R ?**
- **Fields of usage**
- **Installing R from CRAN**
  ⇒ R Studio (IDE for R)
- **Function, Packages and get HELP**
  ⇒ Dplyr, ggplot2

Preview of R Course

- **Class and Some Important R Data Structures**
  ⇒ Vectors, Matrices, Arrays, Strings, Lists, Data Frame
- **Inspecting Variables and Workspace**
- **A Scientific Calculator**
- **R Programming Structures**
  ⇒ Conditional Statement and Loops
- **Read and Write File**
- **Statistics, Porbability and Visualization**

2nd -part of Class :

Arithmetic, Class and Assigment

- **R for Basic Math**
  ⇒ Arithmetic
- **Class**
  ⇒ Double, Integer, Complex, Numeric, Character, Logical
  ⇒ Infinity, Nan, na and NULL
- **Assigning Objects**
  ⇒ Attributes

Reminder : The Book of R – The Language, Vectors, Matrices, Arrays and Non-Numeric Values (Part 1, Section 2,3 and 4, Pg. 23-36)

Next Week

- **TOPIC** : R Language – Class and Types of Variables in R
- **HOMEWORK** : Udemy – Introduction to R, Section 1, 2 and 3 (Part 14 to 21)
- **QUIZ** : R – Vectors

5th Week — Vectors, Matrices, Arrays — (20 Nov)

3.QUIZ : R – Vectors

Goal(s) : Learn differents types of values and data type:Vectors

4.HOMEWORK : Udemy – Introduction to R, Section 1, 2 and 3 (Part 14 to 21)

1st-part of Class :

Vectors

- **Creating a Vector**
- **Sequences, Recycling, Repetition and Sorting**
- **Lengths and Names**
- **Indexing Vectors**

Matrices and Arrays

- **Creating Arrays and Matrices**
- **Rows, Columns, Dimensions and Names**
- **Indexing Arrays**
- **Combining Matrices**
- **Array Arithmetic**

2nd-hour of Class :

Non-Numeric Values

- **Logical Values**
- **Characters**
- **Factors**

Reminder : The Book of R – The Language, List, Data Frame and Special Values (Part 1, Section 5 and 6, Pg. 89-101)

Next Week

- TOPIC : List and Data Frames
- HOMEWORK : Udemy – Introduction to R, Section 3 (Part 22-25)
- QUIZ : R – List and Data Frame

6th Week — Lists and Data Frames — (27 Nov)

4.QUIZ : R – Data Types : Matrices, Arrays, String and Factors

Goal(s) : Creating list and data frame, understand the structure

5.HOMEWORK : Udemy – Introduction to R, Section 3 (Part 22-25)

1st-hour of Class :

Lists

- **Creating Lists**
- **List Dimensions and Arithmetic**
- **Indexing Lists**
- **Converting Between Vectors and Lists**
- **Combining Lists**
- **Pairlists**

Data Frames

- **Creating Data Frames**
- **Indexing Data Frames**
- **Basic Data Frame Manipulation**

2nd-hour of Class :

Special Values

- **Infinity**
- **NaN**
- **na**
- **NULL**

Reminder : The Book of R – The Language, Basic Plotting, Reading and Writing Files (Part 1, Section 7 and 8, Pg. 127-133, 150-155)

Next Week

- TOPIC : Basic Plotting and read data
- HOMEWORK : Datacamp – Importing Data in R, Part 1
  Udemy – Introduction to R Section 4, Importing Data into R
  Datacamp – Data visualization in R
- QUIZ : R – read and plot

7th Week — Basic Plotting and Read Data — (4 Dec)

5.QUIZ : R – read and plot

Goal(s) : Reading and writing the file, gain basic plotting skills

6.HOMEWORK : Datacamp – Importing Data in R, Part 1
Udemy – Introduction to R Section 4, Importing Data into R
Datacamp – Data visualization in R

1st-part of Class :

Basic Plotting - Graphics

- **Using plot with Coordinate Vectors**
- **Graphical Parameters**
  - ⇒ Automatic Plot Types
  - ⇒ Title and Axis Labels
  - ⇒ Color
  - ⇒ Line and Point Appearances
  - ⇒ Plotting Region Limits

Basic Plotting - Graphics

- **Adding Points, Lines, and Text to an Existing Plot**
- **The ggplot2 Package**
  - ⇒ A Quick Plot with qplot
  - ⇒ Setting Appearance Constants with Geoms
  - ⇒ Aesthetic Mapping with Geoms

2nd - part of Class :

Reading and Writing Files

- **R-Ready Data Sets**
- **Reading in External Data Files**
  - ⇒ The Table Format
  - ⇒ Spreadsheet Workbooks
  - ⇒ Web-Based Files
  - ⇒ Other File Formats
- **Writing Out Data Files**
  - ⇒ Data Sets
- **Midterm Project**

Reminder : The Book of R – Programming, Conditions and Loops
(Part 2, Section 10, Pg. 179-185)
: Control Structures Loops in R;
https://www.r-bloggers.com/control-structures-loops-in-r/

Next Week

- **TOPIC** : R Programming, Conditional Statements, Control Flow Mechanism
- **TERM PROJECT** : R – Script

8th Week — Conditional Statements — (11 Dec)

TERM PROJECT : R – Script, Data Types

Goal(s) **:** Understand the logic of programming with if statements

1st-part of Class :

Calling Functions and Comparison Operators

- **Scoping**
  - ⇒ Environments
  - ⇒ Search Path
  - ⇒ Reserved and Protected Names
- **Argument Matching**

Conditional Statements

- **if Statements**
- **Stand-Alone Statement**
- **else Statements**
- **else if Statement**

2nd-part of Class :

Conditional Statements

- **Nesting and Stacking Statements**
- **The switch Function**
- **Practice, exercise**

Reminder : The Book of R – Programming, Conditions and Loops
(Part 2, Section 10, Pg. 193-208)
: A Tutorial on Loops in R - Usage and Alternatives – LINK (Datacamp)
: For Loops in R, Tutorial;
https://www.datacamp.com/community/tutorials/for-loops-r

Next Week

- TOPIC : R Programming – Loops
- HOMEWORK : Udemy – Introduction to R Chapter 6, Loops and Conditions
- QUIZ : R – if and for

9th Week — Loops — (18 Dec)

6.QUIZ : R – if and for

Goal(s) : Understand the logic of programming with for cycle

7.HOMEWORK : Udemy – Introduction to R Chapter 6, Loops and Conditions

1st-part of Class :

Loops

- **while Loops**
- **for Loops**
- **apply**
  - ⇒ tapply
  - ⇒ lapply
  - ⇒ sapply

Other Control Flow Mechanism

- **repeat Loops**
- **break and next**

2nd-part of Class :

Condition and Loop

- **Nested Practice, excersice**

Reminder : The Book of R – Statistics and Probability, Elementary Statistics and Basic Data Visualization (Part 3, Section 13 and 14, Pg. 267-175)
: Statistic and Probability – khanacademy.org
: Elementary Statistics with R - http://www.r-tutor.com/elementary-statistics

Next Week

- TOPIC : Elementary Statistics with R
- HOMEWORK : Udemy – Introduction to R Chapter 7, Statistics (Part 49 to 52)
- QUIZ : R – sum, mean and hist

10th Week — Statistics — (25 Dec)

7.QUIZ : R – sum, mean and hist

Goal(s) : Learn elementary statistics and basic data visualization

8.HOMEWORK : Udemy – Introduction to R Chapter 7, Statistics (Part 49 to 52)

1st-part of Class :

Elementary Statistics

- **Describing Raw Data**
  - ⇒ Numeric Variables
  - ⇒ Categorical Variables
- **Summary Statistics**
  - ⇒ Mean, Median, Mode, Variance and St. Dev.
  - ⇒ Counts, Percentages, and Proportions
  - ⇒ Quantiles, Percentiles, and the Five-Number Summary
  - ⇒ Covariance and Correlation
  - ⇒ Outliers

Basic Data Visualizaion

- **Barplots and Pie Charts**
  - ⇒ Building a Barplot
  - ⇒ A Quick Pie Chart
- **Histograms**
- **Box-and-Whisker Plots**
  - ⇒ Stand-Alone Boxplots
  - ⇒ Side-by-Side Boxplots
- **Scatterplots**
  - ⇒ Single Plot
  - ⇒ Matrix of Plots

2nd-part of Class :

Statistics and Data Visualization

- **Practice**

Reminder : The Book of R – Statistics and Probability, Probability and Common Probability Distributions (Part 3, Section 15 and 16, Pg. 309-313)
: Statistic and Probability – khanacademy.org

Next Week

NOEL ☺

11th Week HAPPY New Year (1 Jan)

Next Week

- **TOPIC** : Elementary Probability with R
- **HOMEWORK** : Datacamp – Correlation and Regression
- **QUIZ** : R – shape and skew

12th Week **Probability** (8 Jan)

8.QUIZ : R – shape and skew

Goal(s) : Remind probability

9.HOMEWORK : Datacamp - Correlation and Regression

1st-part of Class :

Probability

- **What is Ptobability ?**
  - ⇒ Events and Probability
  - ⇒ Conditional Probability
  - ⇒ Intersection
  - ⇒ Union
  - ⇒ Complement

Probability

- **Random Variables and Probability Distributions**
  - ⇒ Realizations
  - ⇒ Discrete Random Variables
  - ⇒ Continuous Random Variables
  - ⇒ Shape, Skew, and Modality

2nd-part of Class :

Probability

- **Common Probability Distributions**
  - ⇒ Mass Functions : Bernouilli, Binomial, Poisson
  - ⇒ Density Functions : Uniform, Normal, Exponential

Reminder :

Next Week

- TOPIC : R – Summary

13th Week — R, Summary — (15 Jan)

Goal(s) : Using R fluently ☺

1st-part of Class : **Repetition**

2nd-part of Class : **Practice**

Reminder : dplyr and ggplot2 packages; BOOK – R for Data Science
Introduction to Data Science with R - Data Analysis Part 1;
https://www.youtube.com/watch?v=32o0DnuRjfg

Next Week

- TOPIC : R – Advance, dplyr and ggplot2 Packages
- HOMEWORK : Datacamp – Data Manipulation with dplyr in R
  : Datacamp – Data visualization with ggplot2

14th Week — R, Advance — (22 Jan)

Goal(s) : Meet advanced packages in R

10.HOMEWORK : Datacamp courses

1st-part of Class :

Data Analysis
- **readr**
- **dplyr**
- **tidyr**
- **Practice**

Data Analysis
- **ggplot2**
- **lattice**
- **Practice**

2nd-part of Class :

Data analysis
- **Final Term Project**

Reminder : Remember that – read-write file, indexing, if, for, plotting, dplyr, ggplot2
To create and write your own function package go to datacamp

Next Week
- TOPIC : R – Final Project
- HOMEWORK : Prepare-Check your input data

R – Final Project

(Date: ?)

Goal(s) : Use all skill about R language and programming

11.HOMEWORK : Prepare Input Data

FINAL PROJECT : R – Final Project Workshop

Workshop :

R – Final Project

- **Flow Chart**
  - ⇒ Prepare your input data
    - Txt, csv, nc
  - ⇒ Create a new R project and a new R script
  - ⇒ Install Packages
  - ⇒ Set directory and go to folder
  - ⇒ Open folder and print list of files
  - ⇒ Open file, read and print variables and dimensions
  - ⇒ Convert data types
    - Data frame to list
    - List to vector
  - ⇒ Aplly conditions and loops
    - Indexing
    - Manipulating
  - ⇒ Data analysis
    - Statistics; plot, summary, histogram
    - Probability distribution
    - Time series
  - ⇒ Save the script and mail me

END OF THE COURSE