K L University K L University Business School Course Handout for 1st Year MBA PROGRAM A.Y.2017-18, 2nd Semester

Course Name	: Introduction to Business Analytics
Course Code	: 17 MB 52 C3
L-T-P structure	: 3- 0 -0
Course Credits	: 3
Course Coordinator	: Dr D SRINIVASA RAO
Course Instructor	: Dr D SRINIVASA RAO & Dr.K.HEMA DIVYA

Course reaching Associates . In	Course	Teaching	Associates	:	ni
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Course Objective:

This course enables the students to have a formal introduction to Business Analytics and Fundamentals of R Programming

COURSE RATIONALE: To make managerial decisions information is needed. Business information is often numbers and statistics. The Business Analytics course enables the students who are supposed to be future managers to organize and analyze data and to take good decisions. That makes this course important for Management students.

Course Outcomes (CO):

СО	СО	SO	BTL
No:			
1.	Identify the source of a quantifiable problem, recognize the issues involved and produce an appropriate action plan.	a, b	2
2.	Translate a problem into a statistical model	a, b	5
3.	Gather Data and Employ R Programming software to fit model to data and solve problem	a, b	4
4.	Calculate and interpret numerous statistical values and appreciate their value to the business Manager.	a, b	5
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COURSE OUTCOME INDICATORS:

CO No.	COI-1	COI-2	COI-3
1	Problem Identification	Problem formulation	Analysis & interpretation
2	Identifying a function	Statistical modeling	Modification Of model
3	Understanding arguments	Programming	debugging
4.	Explaining	Calculating	Reformulating the Model

SYLLABUS (As approved by BoS): MBA,2017-18 Regulations

Introduction to Business Analytics - Competing on Analytics - The New Science of Winning

Business Analytics – Definition, Market, Trends and People- The Paradigm Shift from Data to Insight and from Business Intelligence to Business Analytics- Descriptive, Predictive and Prescriptive Analytics - Introduction to R programs -Running R programs- Mastering Fundamental R concepts -How to diagnose and correct syntax errors- Getting familiar with R data sets- Creating R data sets- Reading data files into R - Excel, .txt, SPSS, SAS, html-Assigning variable attributes-Changing variable attributes - Data Visualization - What and Why?- Telling Stories with Data- Handling Data for Visualization- Visualize Patterns over Time- Visualizing Relationship- Spotting Differences- Visualizing Spatial Relationships- Data Visualization Using R.

<u>Text Books</u>

- 1. Essentials of Business Analytics: Camm,Cochran,others, Cengage Learning,2016
- 2. R for Dummies : Andrie De Varies and Joris Mays: Wiley, 2016
- 3. Introductory Statistics With R: Peter Dalgaard, Springer

References

- 1. R in Action: Robert Kobakoff, Manning
- 2. The R Book: Michael Crawley, Wiley Publishing

COURSE DELIVERY PLAN:

Sess. No.	со	соі	Topic (s)	Teaching-Learning	Evaluation
				Methods	Components
1.	1	1	Introduction to Decision Making	Lecture by chalk & talk and Q&A	In-sem (Test-1) Q&A and ES
2.	1	1	Business Analytics, Definition and Scope	Lecture by chalk &	"
3.	1	1	Categorization of Business Analytics	"	"
4.	1	1	Analytics in Action: Financial and HR Analytics	Lecture and	"
5.	1	1	Analytics in Action: Marketing and Health Analytics	"	"
6.	1	2	Case Study-I	п	"
7.	1	2	Introduction to R Programming : basic features of R and R Studio: Obtaining and Installing R	Lecture and simulation	"
8.	1	2	Input and output	"	"
9.	1	3	Data Structures in R - I	п	"
10.	1	3	Data Structures in R-II	п	н
11.	2	1	Functions and arguments	п	н
12.	2	1	Vectorised Arithmetic in R	"	"
13.	2	1	Subsetting and Indexing	II	"
14.	2	1	The R environment: Workspace	Lecture and simulation	"
15.	2	1	Scripting, Getting Help	п	"
16.	2	2	Packages in R	п	"
17.	2	2	Built in Data Sets	"	"
18.	2	2	The R as an OOP		
19.	2	2	Generic Functions and classes	п	"
20.	2	2	Importing Data into R -I	0	"
21.	2	2	Importing Data into R - II	0	0
22.	2	2	Data wrangling with R		
23.	2	2	Basic functions in R-I	п	н
24.	2	2	Basic functions in R-II		
25.	2	2	Univariate Data Analysis with R Measures of central tendency	11	"
26.	2	3	Measures of Dispersion and Shape statistics	"	п
27.	2	3	Descriptive Statistics by Groups		
28.	2	3	Looping in R: for, if and while loops		
29.	3	1	Apply family of functions	Lecture and Simulation	"
30.			Case Study		
31.			Bivariate Analysis and Contingency Tables, Corrrelation		
32.	3	1	Data Visualisation with R :Introduction to Base Graphic System		
33.	3	2	Plot layout and arguments	п	"
34.	3	3	Using Par command and combining graphs	п	"
35.	3	3	Basic plots in R	п	"
36.	3	3	Interpreting Graphs	u	

37.	3	3	Advanced Graphic systems: Lattice and GGplot2	u	
38.	4	1	Introduction to Regression: Simple and Multiple	simulation	In-sem (Test-3) RS and ES
39.	4	1	Hypothesis Testing with R: one and two sample tests	simulation	
40.	4	2	Categorical data Analysis: Chi-square test, Odd's Ratio etc		
41.	4	2	ANOVA	u	
42.	4	2	Case Study	Lecture by chalk & talk and Q&A	11
43.	4	3	Introduction to Time series Analysis in R	"	
44.	4	3	Decomposition of Time Series	"	
45.	4	3	Forecasting with Time Series data: Exponential Smoothing	"	"

Session wise Teaching – Learning Plan

Session Number: 1

Session Outcome: Student able to understand concept of Decision making

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	concept of Decision Making	1	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 2

Session Outcome: Student able to understand the domain of Business Analytics

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Business Analytics Scope	1	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 3

Session Outcome: Student able to understand the varies categories of Business Analytics

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Categorisation of Business Analytics	1	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 4

Session Outcome: Student able to understand various subdomains of Business Analytics

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Analytics in Action: Financial and HR Analytics	2	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 5

Session Outcome: Student able to Understand recent trends in Business Analytics

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Analytics in Action: Marketing and Other Analytics	2	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Case Study	2	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 7

Session Outcome: Student able to analyse the R programming language

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Introduction to R Programming	2	Demo
10	Q & A		Demo
05	Revision		Interaction

Session Number: 8

Session Outcome: Student able to analyse the structure of a R function

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Functions and Arguments in R	2	Demo
10	Q & A		Demo
05	Revision		Interaction

Session Number: 9

Session Outcome: Student able to analyse various data structure in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Data Structures in R -I	2	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 10

Session Outcome: Student able to apply R to create a data structure

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Data Structures in R - II	2	Demo
10	Q & A		Case analysis
05	Revision		Interaction

Session Number: 11

Session Outcome: Student able to apply R to input data and output data

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Input and Output of data in R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 12

Session Outcome: Student able solve problems with vectorised operations in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Vectorised Arithmetic in R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Sub-setting in R	3	demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 14

Session Outcome: Student able to analyze various elements in R global environment

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Introduction to R workspace	2	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 15

Session Outcome: Student are able to write and execute R code

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Writing a R Script	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 16

Session Outcome: Student able to install and load R packages

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Getting Help on R and R Packages	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 17

Session Outcome: Student able to analyze R functions in an OOPS framework

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	R in OOP paradigm	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 18

Session Outcome: Student able to analyse the structure of a built in data set

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Built in datasets in R	2	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 19

Session Outcome: Student able to apply the various procedures in R to import data

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Importing Data into R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 20 Session Outcome: Student able to apply add on packages to input data into R console

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Inputting data into R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 21

Session Outcome: Student able to apply various functions in R to manipulate and clean data

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Data Wrangling with R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 22

Session Outcome: Student able to apply the basic functions in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Basic Functions in R	2	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 23

Session Outcome: Student able to apply advanced functions in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Advanced Functions in R	4	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 24

Session Outcome: Student able to apply Univariate data analysis techniques

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Univariate Data Analysis	4	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 25

Session Outcome: Student able to analyse relationship between variables

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Bivariate Data Analysis	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 26

Session Outcome: Student able to apply looping structures in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Looping Structures in R	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 27 Session Outcome: Student able to perform non iterative functions in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Apply Family of Functions in R	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 28

Session Outcome: Student able to analyze data without resorting to looping

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Case Study	5	Discussion
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 29

Session Outcome: Student able to apply different graphic systems in R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Data Visualisation		Lecture
25	Data Visualisation systems in R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 30

Session Outcome: Student able to visualize data

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Revision		Lecture
25	Basic Plots in R	3	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 31

Session Outcome: Student able to write code to design customized graphics

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Advanced Graphs with R	4	simulation
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 32

Session Outcome: Student able to solve problems on Regression Analysis with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Regression Analysis with R	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 33

Session Outcome: Student able to implement Hypothesis Testing with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Hypothesis Testing with R	4	Simulation
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 34 Session Outcome: Student able to implement Hypothesis Testing with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Hypothesis Testing with R	4	Simulation
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 35

Session Outcome: Student are able to create and test hypotheses in business world

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Case Study	4	Discussion
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 36

Session Outcome: Student able to solve problems related to Qualitative Variables

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Revision		Lecture
25	Categorical Data Analysis	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 37

Session Outcome: Student are able implement distribution free methods with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Revision		Lecture
25	Non Parametric Methods with R	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 38

Session Outcome: Student are able to apply ANOVA procedures with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	ANOVA with R	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 39

Session Outcome: Student able to solve problems related to group differences using R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Case Study	4	Discussion
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 40

Session Outcome: Student are able to implement time series data analysis with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Time Series Analysis	3	Lecture
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 41 Session Outcome: Student able to decompose time series data with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Decomposition of a Time series	4	Demo
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 42

Session Outcome: Student able to fit trend equations with R

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Time series forecasting-trend fitting	4	simulation
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 43

Session Outcome: Student able to implement exponential smoothing with R

Time(min)	Торіс	BTL	Teaching – Learning Method			
10	Introduction		Lecture			
25	Time series Forecasting exponential smoothing	4	simulation			
10	Q & A		Interaction			
05	Revision		Interaction			

Session Number: 44

Session Outcome: Student able to analyze Time series data

Time(min)	Торіс	BTL	Teaching – Learning Method
10	Introduction		Lecture
25	Case study	4	Discussion
10	Q & A		Interaction
05	Revision		Interaction

Session Number: 45

Session Outcome: Student able to clarify his doubts

Time(min)	Торіс	BTL	Teaching – Learning Method
50	Revision	2	Q&A

EVALUATION PLAN;

Evaluation Component	Weightage/Marks	Date	Duration (Hours)	CO 1 CO 2		02	CO3		CO4			
COI Number				1	2	1	2	2	3	2	4	
BTL				2	2	3	3	3	4	3	5	
Test 1	Weightage (10%)			5	5							
	Max Marks (20)		90 mins	10	10							
Test 2	Weightage (10%)					5	5					
	Max Marks (20)		90 mins			10	10					
	Weightage (10%)							5	5			
Test 3	Max Marks (20)		90 mins					10	10			
Active	Weightage (15%)											
Learning	Max Marks (15)											
Attendence	Weightage (5%)											
Attendance	Max Marks (5)			Attendance								
Semester End Exam	Weightage (50%)		180	4	6	4	6	4	6	10	10	
	Max Marks(50)		mins	4	6	4	6	4	6	10	10	
	Question Number			1	2-7	1	2-7	1-2	3-7	1-7	8	

Course Team members, Chamber Consultation Hours and Chamber Venue details: Only Subject Teacher

S.No.	Name of Faculty	Chamber Consultation Day(s)	Chamber Consultation Timings for each day	Chamber Consultation Room No:	Signature of Course faculty
1	Dr D Srinivaasa Rao	Wednesday	5 P.M to 7 P.M-	Faculty	
			2 hours	Chamber	
2	Dr K.Hema Divya	Tuesday		Faculty	
		Tuesuay		Chamber	

Signature of COURSE COORDINATOR:

Recommended by HEAD OF DEPARTMENT:

Document digitally approved by Vetting Team and HOD.

For details please contact Digital Learning Team @C104.

Please refer to the document's digital certificate for authenticity.

Wege

Hari Kiran Vege, Assoc.Dean-TLP

for Approved By: DEAN-ACADEMICS

(Sign with Office Seal)