



# MAHISHADAL RAJ COLLEGE

(Govt. Sponsored)

NAAC Accredited 'A' Grade College

DST (FIST) Govt. Of India approved College, NSDC Training Partner

Estd. : 1946

Mahishadal : Purba Medinipur

Phone STD 03224 No. 240220

Ref. No.....

Date:

## **Online ADD ON COURSE 2020-21**

**Organised by Department Zoology**

**Topic: Biological data analysis**

Add on course summary:

### REPORT:

**Name of the course-** Biological data analysis

**Course coordinator:** *Dr. Shubhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)

**Date of commencement:** 15.01.21

**Date of completion:** - 29.01.2021

**Number of participant enrolled:** 30

**Total duration day:** 15

**Total duration hour:** 30

**Evaluation method:-** Paper pen MCQ and practical work

### RESULT DETAILS:-

**Number of student participate in this program:** 30

**Number of student completes this program:** 28

**Number of student got certificate in this program:** 28

**Name of the course:** Biological data analysis

**Course coordinator:** *Dr. Shubhamoy Das*, (Associate Professor, HOD, Department of Zoology , Mahishadal Raj College)



## Biological data analysis

### ✚ About the course:

Data analysis is the process of cleaning, manipulating, and processing raw data and extracting conclusive, relevant information that makes informative decisions. It provides useful insights and statistics, often presented in charts, tables, images, and, graphs. In essence, biostatistics is a versatile field that contributes significantly to research and decision-making in the biological and health sciences by providing the tools to analyze and interpret data in a rigorous and meaningful way.

### ✚ Learning outcomes:

A data analysis course typically covers the principles, techniques, and tools used in the process of extracting meaningful insights from raw data. Such courses are designed to equip individuals with the skills required to manipulate, analyze, and visualize data effectively. Job opportunities in biological data analysis may be found in academic institutions, research organizations, healthcare settings, pharmaceutical companies, biotechnology firms, and government agencies. The demand for professionals with expertise in handling and interpreting biological data is likely to continue growing as advancements in technology generate increasingly large and complex datasets in the biological sciences.

### ✚ Target audience:

Any Life science branch students (UG & PG), Scholars, and faculties.

### ✚ Course content overview:

Excel, SPSS, and R- software

### ✚ Schedule: Total 30 hours



DAY	SCHEDULE
Day 1	Introduction to biostatistics. (2 hours)
Day 2	Installation of SPSS, R and R studio software (T + P) (2 hours)
Day 3	Data formatting, data manipulation, descriptive statistics (T + P) (2 hours)
Day 4	One sample T test and Independent T test (T + P) (2 hours)
Day 5	Paired T test and Z test. (T + P) (2 hours)
Day 6	One way ANOVA and two ways ANOVA. (T + P) (2 hours)
Day 7	Repeated measures of ANOVA and ANOVA. (T + P) (2 hours)
Day 8	Data visualization I. (T + P) (2 hours)
Day 9	Data Visualization II (T + P) (2 hours)
Day 10	Correlation and regression (T + P) (2 hours)
Day 11	Multiple regression (T + P) (2 hours)
Day 12	Chi square and Wilcoxon rank test (T + P) (2 hours)
Day 13	kruskalwallis test and Friedman test. (T) (2 hours)
Day 14	Principle component analysis (PCA) (2 hours)
Day 15	Random forest analysis and overall discussion. Overall discussion. Doubts clear and revision (2 hours)



Date	Day	Contents	Time	Duration	Experts	Designation
15.01.21	1	Introduction to biostatistics	12 to 2pm	2	Dr.Subhamoy Das	HOD, Zoology, MRC
16.01.21	2	Installation of SPSS, R and R studio software (T + P)	1 to 3 pm	2	Dr.Subhamoy Das	HOD, Zoology, MRC
17.01.21	3	Data formatting, data manipulation, descriptive statistics (T + P)	3 to 5pm	2	Prof.Manik Das	SACT Mahishadal Raj College
18.01.21	4	One sample T test and Independent T test, (T + P)	03 to 05pm	2	Prof.Manik Das	SACT Mahishadal Raj College
19.01.21	5	Paired T test and Z test. (T + P)	02 to 04pm	2	Prof.Manik Das	SACT Mahishadal Raj College
20.01.21	6	One way ANOVA and two way ANOVA. (T + P)	01 to 03pm	2	Prof.Saheli Maiti	SACT Mahishadal Raj College
21.01.21	7	Repeated measures of ANOVA and ANCOVA (T + P)	03 to 05pm	2	Prof. Saheli Maiti	SACT Mahishadal Raj College
22.01.21	8	Data visualization I (T + P)	02 to 04pm	2	Prof. Sagnik Mondal	SACT Mahishadal Raj College
23.01.21	9	Data Visualization II (T + P)	02 to 04pm	2	Prof. Sagnik Mondal	SACT Mahishadal Raj College
24.01.21	10	Correlation and regression (T + P)	01 to 03pm	2	Prof. Moumita Jana	SACT Mahishadal Raj College
25.01.21	11	Multiple regression. (T + P)	02 to 04pm	2	Prof. Moumita Jana	SACT Mahishadal Raj College
26.01.21	12	Chi square and Wilcoxon rank test. (T + P)	01 to 03pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
27.01.21	13	kruskalwallis test and Friedman test (T+P)	01 to 03pm	2	Dr. Rajkumar Guchhait	SACT Mahishadal Raj College
28.01.21	14	Principle component analysis (PCA)	01 to 03pm	2	Dr. Rajkumar Guchhait	HOD, Zoology, MRC,
29.01.21	15	Random forest analysis and overall discussion.	12 to 2 pm	2	Dr. Subhamoy Day, Dr.	HOD & SACT.,



					Rajkumar Guchhait, Prof. Sagnik Manadal, Prof. Manik Das and Prof. Moumita Jana. DR.Asim Kr Bera	Zoology; Principal, MRC
				30 hours		

**✚ Course structure and examination scheme:**

Course name	Theory classes (hr.)	Practical classes (hr.)	Theory marks	Practical marks	Total marks
Biological data analysis	15	15	20	80	100

**✚ Participant's Details and attendance:**



## Enrolment Details of Students

Sl. No.	Student ID	Roll No.	Name
1.	B.Sc/19/0334	2190334	LAXMIKANTA SAMANTA
2.	B.Sc/19/0370	2190370	ROHIT ADHIKARY
3.	B.Sc/19/0393	2190393	DIP SATTAKI
4.	B.Sc/19/0395	2190395	ARABINDA JANA
5.	B.Sc/19/0441	2190441	RUPAM DAS
6.	B.Sc/19/0443	2190443	SUKHAMOY DAS
7.	B.Sc/19/0444	2190444	RUPAM MISHRA
8.	B.Sc/19/0463	2190463	REEDDHI MAITY
9.	B.Sc/19/0466	2190466	PRATIN BERA
10.	B.Sc/19/0467	2190467	SOUVIK PATI
11.	B.Sc/19/0490	2190490	MAHAMMAD RAMIJ RAJA
12.	B.Sc/19/0491	2190491	AYAN MAITI
13.	B.Sc/19/0492	2190492	PURNENDU ADHIKARY
14.	B.Sc/19/0502	2190502	SHAYAK BARH
15.	B.Sc/19/0503	2190503	JASAMANTA JANA
16.	B.Sc/19/0092	2190092	AYANTI KHATUA
17.	B.Sc/19/0093	2190093	KALYANI HAZRA
18.	B.Sc/19/0152	2190152	MALAY KUMAR PRADHAN
19.	B.Sc/19/0196	2190196	RAKHI KUITI
20.	B.Sc/19/0233	2190233	KEYA RANI DAS
21.	B.Sc/19/0235	2190235	DEBABRATA DAS
22.	B.Sc/19/0318	2190318	PRARTHANA MAITY
23.	B.Sc/19/0411	2190411	SUDARSHAN SAMANTA
24.	B.Sc/19/0437	2190437	SANGITA SAMANTA
25.	B.Sc/19/0438	2190438	SUPRITA MANDAL
26.	B.Sc/19/0439	2190439	HABIBA KHATOON
27.	B.Sc/19/0440	2190440	SUPARNA GHORAI
28.	B.Sc/19/0470	2190470	AKTAR KHAN
29.	B.Sc/19/0472	2190472	SUMAN PATTANAYAK
30.	B.Sc/19/0473	2190473	SRIMANTA MAITY



## ✚ Sample Question of Examination

### UNIT – I

#### VARIABLES FOR DATA ANALYTICS

1. Draw the diagram showing the types of Variables with examples.
2. Differentiate between Numerical and Categorical Variables.
3. What are Named variables? Using Ms-Excel, create a list of 10 named variables with the numbers automatically.
4. What is a Ratio Variable? State the importance of Ratio Variable in Data Analysis.
5. Explain Data Table in Excel. Create a One Variable Data Table in Excel.
6. What is a two Variable Data Table? Write steps to create a Two Variable Data Table in Excel.
7. Write steps for analysing a Data Table with Multiple Formulas in Excel.
8. How do you Create, Rename, Recode and Merge Variables in R?
9. Write steps to create Your Name, Age, Class, and College Name in R.
10. Draw a Chart for R- Variables.

## ✚ *SAMPLE CERTIFICATE OF COURSE COMPLETION*



# CERTIFICATE OF COURSE COMPLETION

THIS IS TO CERTIFY THAT

**LAXMIKANTA SAMANTA**

has successfully completed the **Add-on Course** on **Biological data analysis**  
held during **2020-21** academic year at Mahishadal Raj College.

*Subhamoy Das.*

Course Co-ordinator

*S. Monkerjee*

IQAC Co-ordinator

*[Signature]*

Principal



# CERTIFICATE OF COURSE COMPLETION

THIS IS TO CERTIFY THAT

**SANGITA SAMANTA**

has successfully completed the **Add-on Course** on **Biological data analysis**  
held during **2020-21** academic year at Mahishadal Raj College.

*Subhamoy Das.*

Course Co-ordinator

*S. Monkerjee*

IQAC Co-ordinator

*[Signature]*

Principal