

"Education through self-help is our motto"- KARMAVEER
RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS

Organized

Computation of Statistics using Open Source Software
Self – Funded under Short Term Courses in the academic year 2025-26

COURSE REPORT

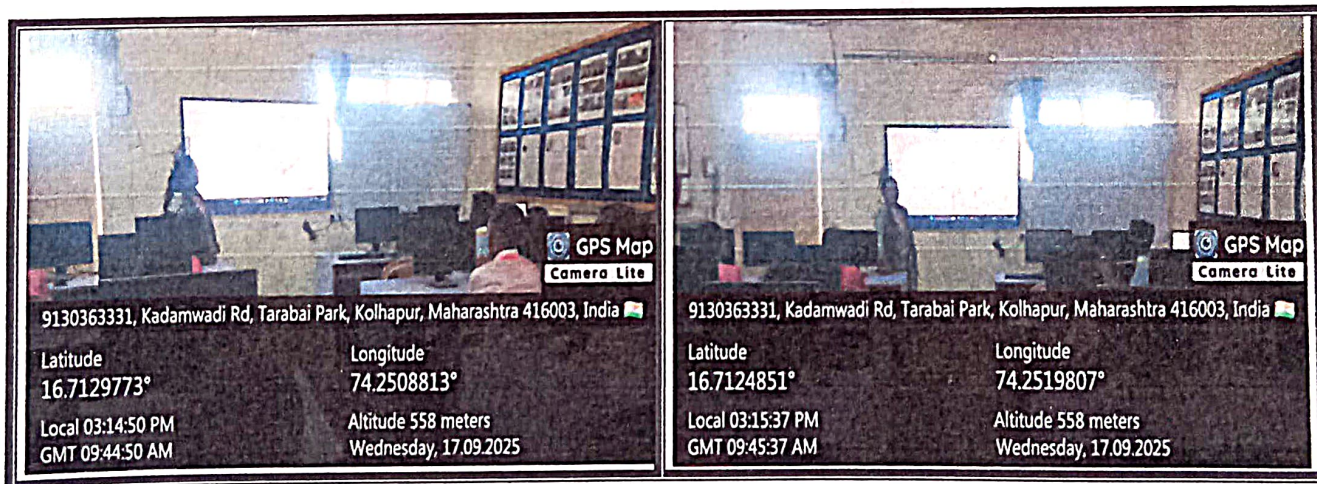
Department of statistics organized the certificate course on computation of statistics using open source software for M.Sc.I students for the academic year 2025-26. The main objectives of this course are:

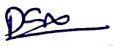
- To learn R-software and how to use it for effective exploratory data analysis.
- To learn number of data types, data structures, various operators
- To learn syntax of various loops
- To learn various inbuilt functions
- To learn how to simulate data from various distributions
- To learn analysis of one-way and two-way analysis of data

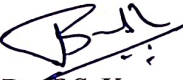
For this course fee of Rs.500 charged to the students. The course was conducted in the period of 15/09/2025 to 03/10/2025. Total number of beneficiaries for this course is 25. After completion of this course student's knowledge was checked through various computation tasks through assignments. Each student who successfully completed this course was awarded by certificate. Dr. Kurane T.S., Smt. Vhatkar D.S. (co-ordinator) and Mr. Kamble S.S. worked as a Resource person for this course.

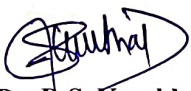
Outcomes: The students shall become confident and equipped with all the knowledge requires to perform analytical activities using R

Total number of beneficiaries is 25.



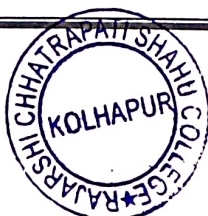

Smt. D.S. Vhatkar
Coordinator


Dr. T.S. Kurane
Head
Department of
Statistics


Dr. D.S. Kumbhar
Incharge,
Short term Courses


Dr. U. S. Shelke
IQAC
Coordinator


Prof. Dr. D. R. Bhosale
I/C Principal
R. C. Shahu College,
Kolhapur



"Education through self-help is our motto"- KARMAVEER
Rayat Shikshan Sanstha's

Rajarshi Chhatrapati Shahu College, Kolhapur
Department of Statistics

Organized

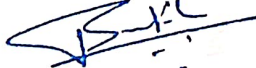
Certificate Course on Computation of Statistics using Open Source Software
(Self – Funded)

Under
Short Term Courses
2025-2026

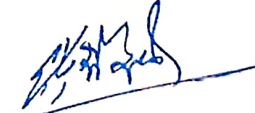
Income and Expenditure Statement

Income	Amount (in Rs.)	Expenditure	Amount (in Rs.)
Particulars		Particulars	
1) Total Participants = 25 (25*500)	12500/-	1) GST 18%	2250/-
		2) Certificate Printing	325/-
		2) Remuneration for Recourse Person Lumsum (40% of Total amount 10250/- is 4100/- is equally distributed into 2 persons+ certificate printing)	
		i) Smt. Vhatkar D.S.	1888/-
		ii) Mr. Kamble S. S.	1888/-
		3)Balance to College	6149/-
Total	12500=00	Total	12500=00


Smt. D.S. Vhatkar
Coordinator


Dr. T.S. Kurane
Head
Department of Statistics


Dr. D.S. Kumbhar
Incharge
Short term Courses


Prof. Dr. D. R. Bhosale
I/C Principal
R. C. Shahu College, Kolhapur



"Education through self-help is our motto." - Karmaveer



Rayat Shikshan Sanstha's



RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR

NAAC 4th Cycle Reaccredited with A++ (CGPA- 3.78)

DEPARTMENT OF STATISTICS



This is to certify that Prof./Shri/Smt. Pedaneekar Purna Datta of _____

Rajarshi Chhatrapati Shahu College, Kolhapur has attended and participated / Delivered a Lecture as Resource Person / Successfully completed Certificate Course in **Computation of Statistics** using open source software organized by Department of Statistics Rajarshi Chhatrapati Shahu College, Kolhapur from 15/09/2025 to 03/10/2025

Smt. D. S. Vhatkar Co-ordinator Dept. of Statistics	Dr. F. S. Kurane HOD Dept. of Statistics	Dr. D. S. Kumbhar In charge Short term Courses	Dr. U. S. Shelke IQAC Coordinator	Prof. Dr. D. R. Bhosale I/C Principal, R. C. Shahu College, Kolhapur.

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS**

Computation of Statistics using Open Source Software

2025-26

List of Students

Roll No.	Name of Student	Fee	Sign
1	Atpadkar Devdatt Atpadkar	500	<u>Devdatt</u>
2	Bachate Vrushali Narayan	500	<u>Bachate</u>
3	Baramatkar Jay Vijay	500	<u>Chougule</u>
4	Chougule Aditya Arun	500	<u>Chougule</u>
5	Desai Vinit Jaywant	500	<u>Desai</u>
6	Gaikwad Nikita Satish	500	<u>GAIKWAD</u>
7	Gaikwad Pallavi Prabhakar	500	<u>Pallavi</u>
8	Giri Nitesh Chandrashekhar	500	<u>Giri</u>
9	Ingulkar Chhaya Suresh	500	<u>u Ingulkar</u>
10	Jadhav Asmita Netaji	500	<u>Asmita</u>
11	Kamble Sanjana Sukumar	500	<u>Kamble</u>
12	Kandalkar Samiksha Gajanan	500	<u>SK</u>
13	Khan Sabakhatoon Fakhruddin	500	<u>Khan</u>
14	Khot Snehal Sudarshan	500	<u>Snehal</u>
15	Magadum Sanika Bapu	500	<u>MSB</u>
16	Mayekar Prathamesh Sanjay	500	<u>Prathamesh</u>
17	Nagarasi Simran Annasab	500	<u>Simran</u>
18	Patil Jyoti Popat	500	<u>PJyoti</u>
19	Patil Umashri Kalagonda	500	<u>uPatil</u>
20	Pawar Swapna Balasaheb	500	<u>SPawar</u>
21	Pedaneekar Purva Dattu	500	<u>Pedaneekar</u>
22	Shaikh Masira Maudud	500	<u>Masira</u>
23	Sutar Pranjali Shivling	500	<u>Sutar</u>
24	Vesane Pooja Gangaram	500	<u>Pooja</u>
25	Zapate Rutuja Ananda	500	<u>Rutuja</u>


Head
Department of Statistics
Rajarsi Chh. Shahu College, Kolhapur




I/G PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS
M. Sc. I (2025-26)**

Certificate Course Exam on Computation of Statistics using Open Source Software

Time – 1 Hour

Marks – 50

Name of Student –

Roll No -

Q. Choose Correct Alternative :

(50)

- 1) Which R object stores elements of different data types but of the same length?
A) Vector B) Matrix C) List D) Array
- 2) Which function is used to check the internal structure of an R object?
A) typeof() B) mode() C) str() D) summary()
- 3) What will class(as.factor(c(1,2,3))) return?
A) numeric B) character C) factor D) integer
- 4) Which operator is used for element-wise logical AND in R?
A) & B) && C) and D) |
- 5) Which command imports a CSV file into R?
A) scan() B) load() C) read.csv() D) source()
- 6) Which function exports an R object to a .csv file?
A) save() B) write.csv() C) dump() D) cat()
- 7) 7. Which function gives five-number summary of a dataset?
A) mean() B) summary() C) quantile() D) fivenum()
- 8) To generate 50 random observations from a normal distribution with mean 10 and sd 2:
A) rnorm(10,50,2) B) rnorm(50,10,2)
C) rnorm(2,10,50) D) rnorm(50,2,10)
- 9) Which function computes the probability density function of normal distribution?
A) rnorm() B) pnorm() C) dnorm() D) qnorm()
- 10) Which function finds quantiles of binomial distribution?
A) qbinom() B) pbinom() C) dbinom() D) rbinom()
- 11) Which package is loaded by default when R starts?
A) ggplot2 B) stats C) dplyr D) MASS
- 12) Which function converts character to Date format?
A) date() B) as.Date() C) strptime() D) Both B and C



- 13) Which function applies a function over rows or columns of a matrix?
A) apply() B) lapply() C) sapply() D) tapply()
- 14) Which apply-family function always returns a list?
A) apply() B) sapply() C) lapply() D) tapply()
- 15) Which command saves all objects in the workspace?
A) save.image() B) save() C) dump() D) load()
- 16) Which operator is used for matrix multiplication?
A) * B) %*% C) %% D) %/%
- 17) Which function fits a linear regression model?
A) glm() B) lm() C) aov() D) anova()
- 18) Which test compares two independent samples when normality is not assumed?
A) t.test() B) var.test() C) wilcox.test() D) ks.test()
- 19) Which test checks equality of variances?
A) t.test() B) chisq.test() C) var.test() D) prop.test()
- 20) Which test is used for goodness of fit?
A) ks.test() B) t.test() C) prop.test() D) cor.test()
- 21) Which function is used for one-way ANOVA?
A) lm() B) anova() C) aov() D) manova()
- 22) Which loop runs until condition becomes FALSE?
A) if B) for C) repeat D) while
- 23) What does next do in R loop?
A) Terminates loop B) Skips current iteration
C) Exits function D) Stops program
- 24) Which command installs a package from CRAN?
A) library() B) require() C) install.packages() D) source()
- 25) Which is the IDE for R programming?
A) SPSS B) SAS C) R-Studio D) Excel



Q. No	Answer
1	C) List
2	C) str()
3	C) factor
4	A) &
5	C) read.csv()
6	B) write.csv()
7	B) summary()
8	B) rnorm(50,10,2)
9	C) dnorm()
10	A) qbinom()
11	B) stats
12	D) Both B and C
13	A) apply()
14	C) lapply()
15	A) save.image()
16	B) %*%
17	B) lm()
18	C) wilcox.test()
19	C) var.test()
20	A) ks.test()
21	C) aov()
22	D) while
23	B) Skips current iteration
24	C) install.packages()
25	C) R-Studio



RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS
Computation of Statistics using Open Source Software
2025-26

Result of Students

Roll No.	Name of Student	Class	Marks
1	Atpadkar Devdatt Atpadkar	M.Sc. I	40
2	Bachate Vrushali Narayan	M.Sc. I	36
3	Baramatkar Jay Vijay	M.Sc. I	46
4	Chougule Aditya Arun	M.Sc. I	38
5	Desai Vinit Jaywant	M.Sc. I	38
6	Gaikwad Nikita Satish	M.Sc. I	34
7	Gaikwad Pallavi Prabhakar	M.Sc. I	42
8	Giri Nitesh Chandrashekhar	M.Sc. I	46
9	Ingulkar Chhaya Suresh	M.Sc. I	42
10	Jadhav Asmita Netaji	M.Sc. I	38
11	Kamble Sanjana Sukumar	M.Sc. I	36
12	Kandalkar Samiksha Gajanan	M.Sc. I	40
13	Khan Sabakhatoon Fakhruddin	M.Sc. I	38
14	Khot Snehal Sudarshan	M.Sc. I	40
15	Magadum Sanika Bapu	M.Sc. I	36
16	Mayekar Prathamesh Sanjay	M.Sc. I	38
17	Nagarasi Simran Annasab	M.Sc. I	38
18	Patil Jyoti Popat	M.Sc. I	36
19	Patil Umashri Kalagonda	M.Sc. I	38
20	Pawar Swapna Balasaheb	M.Sc. I	40
21	Pedanekar Purva Dattu	M.Sc. I	38
22	Shaikh Masira Maudud	M.Sc. I	40
23	Sutar Pranjali Shivling	M.Sc. I	44
24	Vesane Pooja Gangaram	M.Sc. I	32
25	Zapate Rutuja Ananda	M.Sc. I	38


Head
 Department of Statistics
 Rajarshi Chh. Shahu College, Kolhapur




I/C PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS**

"Computation of Statistics using Open Source Software"

M. Sc. I

ROLL NO.	NAME OF STUDENT	DATE									
		15/09/25	16/09/25	17/09/25	18/09/25	19/09/25	20/09/25	22/09/25	23/09/25		
1	Atpadkar Devdatt Atpadkar	Atpadkar	Atpadkar	Atpadkar	Atpadkar	Atpadkar	Atpadkar	Atpadkar	Atpadkar		
2	Bachate Vrushali Narayan	Wachate	Wachate	Wachate	Wachate	Wachate	Wachate	Wachate	Wachate		
3	Baramatikar Jay Vijay	JB	JB	JB	JB	JB	JB	JB	JB		
4	Chougule Aditya Arun	Chougule	Chougule	Chougule	Chougule	Chougule	Chougule	Chougule	Chougule		
5	Desai Vinit Jaywant	Desai	Desai	Desai	Desai	Desai	Desai	Desai	Desai		
6	Gaikwad Nikita Satish	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad		
7	Gaikwad Pallavi Prabhakar	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad	Gaikwad		
8	Giri Nitesh Chandrashekhar	Giri	Giri	Giri	Giri	Giri	Giri	Giri	Giri		
9	Ingulkar Chhaya Suresh	Ingulkar	Ingulkar	Ingulkar	Ingulkar	Ingulkar	Ingulkar	Ingulkar	Ingulkar		
10	Jadhav Asmita Netaji	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav		
11	Kamble Sanjana Sukumar	Kamble	Kamble	Kamble	Kamble	Kamble	Kamble	Kamble	Kamble		
12	Kandalkar Samiksha Gajanan	Kandalkar	Kandalkar	Kandalkar	Kandalkar	Kandalkar	Kandalkar	Kandalkar	Kandalkar		
13	Khan Sabakhatoon Fakhruddeen	Khan	Khan	Khan	Khan	Khan	Khan	Khan	Khan		
14	Khot Snehal Sudarshan	Khot	Khot	Khot	Khot	Khot	Khot	Khot	Khot		
15	Magadum Sanika Bapu	Magadum	Magadum	Magadum	Magadum	Magadum	Magadum	Magadum	Magadum		
16	Mayekar Prathamesh Sanjay	Mayekar	Mayekar	Mayekar	Mayekar	Mayekar	Mayekar	Mayekar	Mayekar		
17	Nagarasi Simran Annasab	Nagarasi	Nagarasi	Nagarasi	Nagarasi	Nagarasi	Nagarasi	Nagarasi	Nagarasi		
18	Patil Jyoti Popat	Patil	Patil	Patil	Patil	Patil	Patil	Patil	Patil		
19	Patil Umashri Kalagonda	Patil	Patil	Patil	Patil	Patil	Patil	Patil	Patil		
20	Pawar Swapna Balasaheb	Pawar	Pawar	Pawar	Pawar	Pawar	Pawar	Pawar	Pawar		
21	Pedanekar Purva Dattu	Pedanekar	Pedanekar	Pedanekar	Pedanekar	Pedanekar	Pedanekar	Pedanekar	Pedanekar		
22	Shaikh Masira Maudud	Shaikh	Shaikh	Shaikh	Shaikh	Shaikh	Shaikh	Shaikh	Shaikh		
23	Sutar Pranjali Shrivling	Sutar	Sutar	Sutar	Sutar	Sutar	Sutar	Sutar	Sutar		
24	Vesane Pooja Gangaram	Vesane	Vesane	Vesane	Vesane	Vesane	Vesane	Vesane	Vesane		
25	Zapate Rutuja Ananda	Zapate	Zapate	Zapate	Zapate	Zapate	Zapate	Zapate	Zapate		

[Signature]

Head

Department of Statistics
Rajarsahi Chh. Shahu College, Kolhapur



[Signature]

**Principal
R.C. SHAHU COLLEGE
KOLHAPUR**

“Computation of Statistics using Open Source Software”

ROLL NO.	NAME OF STUDENT	DATE
1	Atpadkar Devdatt Atpadkar	24/09/25
2	Bachate Vrushali Narayan	25/09/25
3	Baramatikar Jay Vijay	26/09/25
4	Chougule Aditya Arun	27/09/25
5	Desai Vinit Jaywant	28/09/25
6	Gaikwad Nikita Satish	29/09/25
7	Gaikwad Pallavi Prabhakar	30/09/25
8	Giri Nitesh Chandrashekhar	01/10/25
9	Ingulkar Chhaya Suresh	02/10/25
10	Jadhav Asmita Netaji	03/10/25
11	Kamble Sanjana Sukumar	04/10/25
12	Kandalkar Samiksha Gajanan	05/10/25
13	Khan Sabakhatoon Fakhruddin	06/10/25
14	Khot Snehal Sudarshan	07/10/25
15	Magadam Sanika Bapu	08/10/25
16	Mayekar Prathamesh Sanjay	09/10/25
17	Nagarasi Simran Annasab	10/10/25
18	Patil Jyoti Popat	11/10/25
19	Patil Umashri Kalagonda	12/10/25
20	Pawar Swapna Balasaheb	13/10/25
21	Pedaneekar Purva Dattu	14/10/25
22	Shaikh Masira Maudud	15/10/25
23	Sutar Pranjali Shivling	16/10/25
24	Vesane Pooja Gangaram	17/10/25
25	Zapate Rutuja Ananda	18/10/25

Department of Statistics
Rajarshi Chh. Shahu College, Kolhapur



[Signature]
I/C PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS**

Computation of Statistics using Open Source Software

2025-26

List of Students

Roll No.	Name of Student	Sign
1	Atpadkar Devdatt Atpadkar	<i>Atpadkar</i>
2	Bachate Vrushali Narayan	<i>Bachate</i>
3	Baramatkar Jay Vijay	<i>Jvbaramatkar</i>
4	Chougule Aditya Arun	<i>Chougule</i>
5	Desai Vinit Jaywant	<i>Vinit</i>
6	Gaikwad Nikita Satish	<i>Nikita</i>
7	Gaikwad Pallavi Prabhakar	<i>Pallavi</i>
8	Giri Nitesh Chandrashekhar	<i>Nitesh</i>
9	Ingulkar Chhaya Suresh	<i>Ingulkar</i>
10	Jadhav Asmita Netaji	<i>Asmita</i>
11	Kamble Sanjana Sukumar	<i>Sanjana</i>
12	Kandalkar Samiksha Gajanan	<i>Samiksha</i>
13	Khan Sabakhatoon Fakhruddin	<i>Sabakhatun</i>
14	Khot Snehal Sudarshan	<i>Snehal</i>
15	Magadum Sanika Bapu	<i>Sanika</i>
16	Mayekar Prathamesh Sanjay	<i>Prathamesh</i>
17	Nagarasi Simran Annasab	<i>Simran</i>
18	Patil Jyoti Popat	<i>Jyoti</i>
19	Patil Umashri Kalagonda	<i>Umashri</i>
20	Pawar Swapna Balasaheb	<i>Swapna</i>
21	Pedaneekar Purva Dattu	<i>Pedaneekar</i>
22	Shaikh Masira Maudud	<i>Masira</i>
23	Sutar Pranjali Shivling	<i>Pranjali</i>
24	Vesane Pooja Gangaram	<i>Pooja</i>
25	Zapate Rutuja Ananda	<i>Rutuja</i>


Head
Department of Statistics
Rajarshi Chh. Shahu College, Kolhapur




VC PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS**

**Organized,
Computation of Statistics using Open Source Software
On 2025-26
Enrollment List**

Roll No.	Name of Student	Fee	Receipt No.	Sign
1	Atpadkar Devdatt Atpadkar	500	8955	<i>Atpadkar</i>
2	Bachate Vrushali Narayan	500	8956	<i>Bachate</i>
3	Baramatkar Jay Vijay	500	8957	<i>Baramatkar</i>
4	Chougule Aditya Arun	500	8958	<i>Chougule</i>
5	Desai Vinit Jaywant	500	8959	<i>Desai</i>
6	Gaikwad Nikita Satish	500	8960	<i>Gaikwad</i>
7	Gaikwad Pallavi Prabhakar	500	8990	<i>Pallavi</i>
8	Giri Nitesh Chandrashekhar	500	8961	<i>Giri</i>
9	Ingulkar Chhaya Suresh	500	8962	<i>Ingulkar</i>
10	Jadhav Asmita Netaji	500	8963	<i>Jadhav</i>
11	Kamble Sanjana Sukumar	500	8964	<i>Kamble</i>
12	Kandalkar Samiksha Gajanan	500	8965	<i>Kandalkar</i>
13	Khan Sabakhatoon Fakhruddin	500	8966	<i>Khan</i>
14	Khot Snehal Sudarshan	500	8967	<i>Khot</i>
15	Magadum Sanika Bapu	500	8968	<i>Magadum</i>
16	Mayekar Prathamesh Sanjay	500	8969	<i>Mayekar</i>
17	Nagarasi Simran Annasab	500	8970	<i>Nagarasi</i>
18	Patil Jyoti Popat	500	8971	<i>Patil</i>
19	Patil Umashri Kalagonda	500	8972	<i>Patil</i>
20	Pawar Swapna Balasaheb	500	8973	<i>Pawar</i>
21	Pedaneekar Purva Dattu	500	8974	<i>Pedaneekar</i>
22	Shaikh Masira Maudud	500	8975	<i>Shaikh</i>
23	Sutar Pranjali Shivling	500	8976	<i>Sutar</i>
24	Vesane Pooja Gangaram	500	8977	<i>Vesane</i>
25	Zapate Rutuja Ananda	500	8978	<i>Zapate</i>
Total		12500		

[Signature]
Head

Department of Statistics
Rajarsi Chh. Shahu College, Kolhapur



[Signature]
**H/C PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR**

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHTRPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS**

Organized

**Computation of Statistics using Open Source Software
(Self - Funded Under COC)**

Time Table 2025-26

	Venue	Date Time	15/09/25	16/09/25	17/09/25	18/09/25	19/09/25	20/09/25	22/09/25	23/09/25
Theory & Practical	Lab 1 (Stat.Lab)	11:00-12:00 & 12:00-02:00	DSV	SSK	DSV	SSK	DSV	SSK	DSV	SSK

	Venue	Date Time	24/09/25	25/09/25	26/09/25	27/09/25	29/09/25	30/09/25	01/10/25	03/10/25
Theory & Practical	Lab 1 (Stat.Lab)	11:00-12:00 & 12:00-02:00	DSV	SSK	DSV	SSK	DSV	SSK	DSV	SSK

Sr. No.	Name of Lecturer		
1	DSV	Smt. Vhatkar D. S.	
2	SSK	Mr. Kamble S. S.	



Head
Department of Statistics
Rajarshi Chh. Shahu College, Kolhapur




VC PRINCIPAL
R.C. SHAHU COLLEGE
KOLHAPUR

**RAYAT SHIKSHAN SANSTHA'S
RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR
DEPARTMENT OF STATISTICS
M.Sc. I (2025-26)**

NOTICE

Date: 10/09/2025

All students of M.Sc. I hereby informed that, your **“Computation of Statistics using Open Source Software”** organized by Department of Statistics, will be start from 15/09/2025. The course will be conducted in Statistics lab from 11:00 AM to 2:00 PM. All students are requested to attend the course regularly and actively participate.




Head
Department of Statistics
Rajarshi Chh. Shahu College, Kolhapur

राजर्षी छत्रपती शाहू कॉलेज, कोल्हापूर

शॉर्ट टर्म / सीओसी कोर्सेस फी आणि त्याच्या खर्चाबाबतचा ठराव
(शैक्षणिक वर्ष २०२५-२६)

प्रस्ताव : महाविद्यालयातील विद्यार्थ्यांनी पारंपरिक शिक्षणाबरोबरच विविध कौशल्ये आत्मसात करून त्यांनी आत्मनिर्भर व्हावे यासाठी चालू शैक्षणिक वर्षात महाविद्यालयात एकूण २० शॉर्ट टर्म कोर्स व इतर १६ कौशल्य आधारित आणि मूल्यवर्धित कोर्सेस राबविले जात आहेत. या कोर्सेस साठी महाविद्यालयातील विद्यार्थी प्रवेशित होत असतात. इंग्रजी विभागामार्फत चालवला जाणारा बॉश ब्रिज कोर्स (फी. रु. १०००/-) आणि संख्याशास्त्र विभागामार्फत चालविले जाणारे तीन कोर्सेस (फी. प्रत्येकी रु. ५००/-) वगळता इतर सर्व कोर्सेस साठी रु. ३००/- एवढी फी प्रति विद्यार्थी आकारली जाते. सदर प्रत्येक कोर्समधून जमा होणाऱ्या फी पैकी GST व प्रमाणपत्र खर्च वजाकरता उर्वरित रकमेच्या ४०% रक्कम कोर्सच्या मानधनासाठी खर्च करावी व ६०% रक्कम महाविद्यालयाच्या विकासासाठी खर्च करण्यात यावी. रयत शिक्षण संस्थेच्या परिपत्रकानुसार, चालू शैक्षणिक वर्षात कनिष्ठ आणि वरिष्ठ विभागामध्ये कृत्रिम बुद्धिमत्ता (AI) हा कोर्स सुरु करण्यात यावा व सदर कोर्ससाठी वरिष्ठ विभाग (रु. २०००/-) आणि कनिष्ठ विभाग (रु. १५००/-) अशी फी आकारण्यात यावी.

तांत्रिक माहिती: महाविद्यालयात कला, वाणिज्य, विज्ञान, बी.एस्सी.कॉम्प्युटर सायन्स, बी.एस्सी.कॉम्प्युटर सायन्स (बी.सी.एस.) तसेच एम.ए. इंग्लीश, एम.कॉम.(आय.टी). एम. एस्सी.केमिस्ट्री, एम. एस्सी. संख्याशास्त्र इ. विद्याशाखांमध्ये महाविद्यालयाचे शैक्षणिक कामकाज सुरू आहे. चालू शैक्षणिक वर्षात (२०२५-२६) मध्ये महाविद्यालयात एकूण १२८६ विद्यार्थ्यांनी प्रवेश घेतला आहे. तसेच विद्यार्थ्यांना विद्यापीठाच्या अभ्यासक्रमाव्यतिरिक्त त्यांच्या विषयाच्या अनुषंगाने तसेच इतर कौशल्य विकसित व्हावित यासाठी गेली अनेक वर्षे महाविद्यालयातील विद्यार्थिनींना खालील शॉर्ट टर्म व सी. ओ. सी. कोर्सेसची संधी उपलब्ध करून देण्यात आली आहे. यामध्ये

Sr.No	Course Name	Department	Fee
1	Preparation of Household chemicals	Chemistry	300/-
2	Understanding of Basic Electronics Devices	Physics	300/-
3	Biodiversity Conservation	Botany	300/-
4	Vermicomposting Technology	Zoology	300/-
5	Applications of Statistics using ME	Statistics	300/-

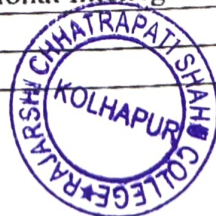


6	Exploratory Data Analysis using MS-Excel	Statistics	300/-
7	Advanced Excel	Statistics	500/-
8	Computational Statistics using R- Software	Statistics	500/-
9	Computation of Statistics using open source Software	Statistics	500/-
10	बातमी लेखन	Marathi	300/-
11	अनुवाद सिद्धांत और प्रयोग	Hindi	300/-
12	Bosch- Bridge Course	English	1000/-
13	Surveying	Geography	300/-
14	Secretarial Training	Economics	300/-
15	Introducing forts in Maharashtra	History	300/-
16	Yoga & Meditation	Phy. Education	300/-
17	Entrepreneurship Development	Commerce	300/-
18	Basics to Share Market	Commerce IT	300/-
19	Artificial Intelligence	Sr. College	2000/-
20	Artificial Intelligence	Jr. College	1500/-

यासारखे कोर्सेस उपलब्ध करून दिले जातात. सदर शॉर्ट टर्म व सी. ओ. सी. कोर्सेस पूर्ण करून महाविद्यालयातील विद्यार्थी स्वतःचे व्यवसाय सुरू करून ते स्वावलंबी होऊ शकतात.

सदर कोर्सेस व्यतिरिक्त काही विभागांतर्गत १६ मूल्यवर्धित आणि कौशल्याधारित अभ्यासक्रम चालविले जातात, सदर कोर्सेस याही वर्षी सुरु ठेवण्यात यावेत; यासाठी कोणत्याही प्रकारची फी आकारली जात नाही.

Sr. No	Name of the Course	Name of the Department	Type of Course
01	Flower arrangement	Botany	VAC
02	Apiculture	Zoology	SBC
03	Mathematics to LaTeX	Mathematics	VAC
04	Artificial Intelligence	Computer Science	VAC
05	मुद्रित शोधन	Marathi	SBC
06	प्रयोजनमूलक हिन्दी	Hindi	VAC
07	TCS: Campus to Corporate	English	SBC
08	Tourism	Geography	VAC
09	Social Reformers in Maharashtra	Sociology	VAC
10	Indian Ethics	Philosophy	VAC
11	Consumer Rights	Economics	VAC
12	Work of women social reformers in Maharashtra	History	VAC
13	Panchayat Raj	Pol. Science	VAC
14	Positive Thinking & Emotional Intelligence	Psychology	VAC
15	Nutrition and Diet	Physical Education	VAC
16	Tally	Commerce	SBC



आर्थिक तरतूद : महाविद्यालयामध्ये प्रवेश घेतलेल्या विद्यार्थ्यांपैकी जे विद्यार्थी सदर कोर्सस साठीही प्रवेश घेतात त्या विद्यार्थ्यांकडून प्रति विद्यार्थी प्रति कोर्स साठी रुपये ३००/- या प्रमाणे फी आकारली जाते सदर प्रत्येक कोर्समधून जमा होणाऱ्या फी पैकी GST व प्रमाणपत्र खर्च वजाकरता उर्वरित रकमेच्या ४०% रक्कम कोर्सच्या मानधना साठी खर्च करावी व ६०% रक्कम महाविद्यालयाच्या विकासासाठी खर्च करण्यास यावी.

कार्यालयाचे मत: महाविद्यालयामध्ये सुरू असलेले शॉर्ट टर्म व सी. ओ. सी. कोर्सेस हे विद्यार्थ्यांबरोबरच महाविद्यालयाच्या विकासासाठी उपयुक्त आहेत. या माध्यमातून अनेक विद्यार्थ्यांना आपले स्वतंत्र व्यवसाय सुरू केले आहेत. त्यामुळे सदर शॉर्ट टर्म कोर्सेसमधून विद्यार्थिनींच्या कौशल्याबरोबरच महाविद्यालयास चांगल्या प्रकारचे उत्पन्न प्राप्त होत असते. सदर उत्पन्नातून प्रत्यक्ष खर्च करण्यात येणाऱ्या ४०% रकमेचे खर्चाची विवरण खालील प्रमाणे करण्यात यावा

१. जमा होणाऱ्या फी पैकी GST व प्रमाणपत्र खर्च वजाकरता उर्वरित रकमेच्या ४०% रक्कम, व कोर्स अध्यापन, मानधन, स्टेशनरी, पुस्तके व अनुषंगिक इतर सर्व खर्च
२. जमा होणाऱ्या फी पैकी GST व प्रमाणपत्र खर्च वजाकरता उर्वरित रकमेच्या ४०% रक्कम वजा करता उर्वरित ६०% रक्कम महाविद्यालयात जमा करावी.

ठराव: महाविद्यालयाच्या सर्व विभागप्रमुख आणि कोर्स समन्वयक यांची मिटींग मा. प्राचार्य यांच्या उपस्थितीत दिनांक २५/०८/२०२५ रोजी पार पडली. सदर मिटींगमध्ये चर्चा करून सर्वानुमते महाविद्यालयामध्ये सुरू असलेले शॉर्ट टर्म व सी. ओ. सी. कोर्सेस हे विद्यार्थ्यांबरोबरच महाविद्यालयाच्या विकासासाठी उपयुक्त आहेत. त्यामुळे सदर शॉर्ट टर्म कोर्सेसमधून विद्यार्थ्यांच्या कौशल्याबरोबरच महाविद्यालयास चांगल्या प्रकारचे उत्पन्न प्राप्त होत असते. त्यामुळे सदर कोर्सेस चालू करावेत व प्रति कोर्सेसकरिता रुपये ३०० फी घ्यावी व त्या जमा होणाऱ्या एकूण फी च्या मधून GST व प्रमाणपत्र खर्च वजाकरता उर्वरित रकमेच्या ४०% रक्कम ही कोर्स अध्यापन, मानधन, स्टेशनरी, पुस्तके व अनुषंगिक इतर बाबीवर खर्च करावी व उर्वरित उर्वरित ६०% रक्कम महाविद्यालयात जमा करावी. असे सर्वानुमते ठरले. सदर मीटिंग करिता खालील विभाग प्रमुख उपस्थितीत होते.

सूचक: प्रो. डॉ. एम. बी. देसाई

अनुमोदक: प्रो. डॉ. पी. बी. पिस्टे

ठराव सर्वानुमते मंजूर.....



सदर मिटिंग करिता खालील विभागप्रमुख उपस्थितीत होते,

अ. क्र.	विभागप्रमुखाचे नाव	विभाग	सही
01	प्रो. डॉ. पिस्टे पी. बी.	रसायनशास्त्र	
02	प्रो. डॉ. देसाई एम. बी.	अर्थशास्त्र	
03	प्रो. डॉ. खोले एस. सी.	इतिहास	
04	डॉ. उबाळे ए. पी.	मराठी	
05	प्रो. डॉ. पाटील एम. ए.	इंग्रजी	
06	डॉ. लंवगारे जी. एम.	शारीरिक शिक्षण	
07	श्रीमती. मुलाणी एस. पी.	तत्वज्ञान	
08	डॉ. पाटील आर. सी.	हिन्दी	
09	श्रीमती. पुदाले पी. डी.	कॉमर्स	
10	डॉ. पालकर जे. एम.	भूगोल	
11	डॉ. परित पी. डी.	मानसशास्त्र	
12	डॉ. शेख एस. डी.	वनस्पतीशास्त्र	
13	डॉ. कुंभार डी. एस.	प्राणिशास्त्र	
14	डॉ. कुरणे टी. एस.	संख्याशास्त्र	
15	डॉ. पाटील ए. आर.	भौतिकशास्त्र	
16	श्री. शेडगे एस. डी.	गणित	
17	श्रीमती. माळवेकर डी. ए.	सूक्ष्मजीवशास्त्र	
18	श्रीमती. शेख झेड. जे.	संगणकशास्त्र	

समन्वयक

शॉर्ट टर्म कोर्से कमिटी

प्राचार्य

राजर्षी छत्रपती शाह कॉलेज, कोल्हापूर

I/C PRINCIPAL

R.C. SHAHU COLLEGE
KOLHAPUR





Rayat Shikshan Sanstha's

RAJARSHI CHHATRAPATI SHAHU COLLEGE, KOLHAPUR

Tal. Karveer, Dist. Kolhapur, 416003

{NAAC Accredited 'A++' Grade (CGPA 3.78) / ISO 9001:2015 Certified}

DEPARTMENT OF STATISTICS

Skill-Based Short Term Course on

“Computation of Statistics using Open Source Software”



.....Syllabus & Course Information

SKILL BASED SHORT TERM COURSE ON

"Computation of Statistics using Open Source Software"

Introduction:

R is a free and open-source statistical software and programming language widely used for data analysis, statistical modeling, visualization, and research. It was developed by Ross Ihaka and Robert Gentleman and is maintained by the R Foundation for Statistical Computing. R is especially popular among statisticians, data scientists, economists, researchers, and academicians.

R provides a rich environment for data manipulation, descriptive statistics, probability distributions, hypothesis testing, regression analysis, time series analysis, multivariate analysis, and machine learning. One of the strongest features of R is its package system (CRAN), which offers thousands of user-contributed packages for specialized statistical techniques.

R supports high-quality graphical representation, including histograms, boxplots, scatter plots, bar charts, and advanced visualizations. It is also platform-independent, meaning it runs on Windows, Linux, and macOS. Because of its flexibility, reproducibility, and strong statistical capabilities, R is widely used in academic courses, government research, industry analytics, and competitive examinations. Learning R helps students develop computational thinking and apply statistical concepts to real-world data problems.

PROGRAMME OUTCOMES (PO):

PO-1: Develop statistical understanding using R software.

PO-2: Gain proficiency in R programming

PO-3: Perform statistical analysis and visualization

PO-4: Interpret and communicate results

PO-5: Apply R-based computational skills

PROGRAMME SPECIFIC OUTCOMES (PSO):

PSO-1: Use R for Statistical Calculations

PSO-2 Handle and Organize Data in R

PSO-3: Create Graphs Using R.

PSO-4: Write Simple and advanced R Programs.

PSO-5: Apply R Skills to Real Problems

COURSE OUTCOMES (CO):

CO-1: Students learn how to use R software for entering data, cleaning data, and doing basic operations.

CO-2: Students can calculate important statistical measures and perform tests in R.

CO-3: Students can create different graphs in R

CO-4: Students can write small R scripts and use them to solve real-life data problems and present results clearly.



Name of the course: Certificate Course in Computation of Statistics using Open Source Software

Eligibility: Graduate

Duration: 48 Hours (02 Credits)

Medium: English

Admission Criterion: First cum First Serve

Lecture / Practical Timing: 15-16 days in September to October

(3 Hrs. daily = 1 Hr. Theory + 2 Hr. Practical)

Assessment: At the end of the course, examination will be conducted and certificates are issued to the participants who qualify the passing criterion.

Examination Pattern: Theory (MCQ): 50 Marks (Internal)

Syllabus

Total Credits	02
Total Hours	48
Theory	16
Practical	32

Detailed Syllabus

THEORY SYLLABUS: (16 Hrs.)

Sr. No.	Name of the Topic	Theory Periods (16)
1	Fundamentals of R: 1.1 Introduction to R, features of R, Installation of R, starting and ending R session getting help in R, R commands and case sensitivity. 1.2 Data types: Logical, numeric and complex 1.3 Vectors and vector arithmetic a) Creation of vectors using function C, assign, seq, rep b) Arithmetic operation on vectors using operators+, -, *, /, ^ c) Numerical functions: log10, log, sort, max, min, unique, range, length, var, prod, sum, summary, fivenum etc. d) Accessing vectors. e) Alternative ways to create vector by scan function. 1.4 Data frame: creation using data frame, subset and transform commands 1.5 Resident data sets: Accession and summary 1.6 Graphics using R: a) High level plotting functions b) Low level plotting functions c) Interactive graphic functions 1.7 Using R as calculator The following Statistical Methods using "R"	04
2	2.1. Sampling Methods: Drawing sample from a population using SRSWR, SRSWOR, Stratified random sampling, Systematic sampling. 2.2. Diagrams: Simple bar diagram, subdivided bar diagram, multiple bar diagram, Pie diagram, steam and leaf chart. 2.3. Graphs: Box plot, rod or spike plot, histogram (both equal and unequal class intervals), frequency polygon, curve fitting, normal distribution function.	03

3	3.1. Measures of central Tendency: Computation of following measures for all types of data. Mean, mode, median, quartiles, Deciles, Percentiles, Geometric mean, Harmonic mean. 3.2. Measures of dispersion: computation of following measures for all types of data. Range, Quartile Deviation, Variance, Standard Deviation, Coefficient of Variation, Mean Deviation, Mean Squared Deviation. 3.3. Measures of Skewness and Kurtosis: Bowleys coefficient and Karl Pearson's coefficient of Skewness. 3.4. Moments: Computation of Raw and central moments, measures of Skewness and kurtosis	03
4	4.1. Probability Distribution: Simulation of random experiment, Hyper geometric distribution, computation of probabilities, model sampling, Fitting of Binomial, Poisson, Normal and Lognormal distribution: computational of probabilities, model sampling from log- normal, Weibull, Logistic distribution 4.2. Correlation and Regression: Fitting of lines of regression, computation of correlation coefficient, fitting of second curve. 4.3. Multiple Regression: Fitting of regression plane for trivariate data 4.4. Testing of Hypothesis: Large sample test for mean and proportions, t-test, variance test, Chi-square test, Computation of probabilities of type I and type II errors and power of the test 4.5. Analysis of Variance: One way, two way, Analysis of completely randomized Design (CRD), Analysis of randomized block design (RBD) 4.6. Data Mining: k-nearest neighbor techniques for classification, k-means techniques for clustering. 4.7. Statistical Quality Control: CUSUM chart, Exponentially weighted moving average charts (EWMA-chart)	06

PRACTICAL SYLLABUS: (32 Hrs.)

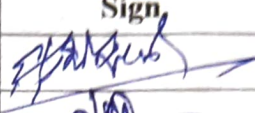
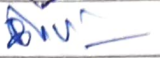
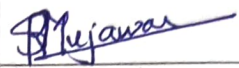
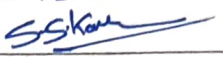
Sr. No.	Aim of the Practical	Practical Periods (32)
1	Basics of R	04
2	Vectors & Numerical Functions	04
3	Data Frames & Resident Datasets	04
4	Graphics in R	04
5	Descriptive Statistics	04
6	Sampling Methods & Model Sampling	04
7	Distributions & Regression	04
8	Hypothesis Testing, ANOVA & SQC	04

REFERENCE BOOKS:

- Gardener, M. (2012). Beginning R: the statistical programming language. John Wiley & Sons.
- Purohit, S. G., Gore, S. D., & Deshmukh, S. R. (2015). Statistics using R. Alpha Science International.
- Thulin, M. (2021). Modern Statistics with R: From wrangling and exploring data to inference and predictive modelling. BoD-Books on Demand.
- Weblinks:
 - <https://cran.r-project.org/manuals.html>



BOARD OF STUDIES (BOS):

Sr. No.	Name	Designation	Sign.
1	Prof. (Dr.) D. R. Bhosale	I/C. Principal	
2	Dr. U. S. Shelke	IQAC Co-ordinator	
3	Mr. P.S.Chougule	Head, Dept. of Statistics	
4	Dr. T.S. Kurane	Course Coordinator	
5	Smt. S. R. Mujawar	Member, Yashwantrao Chavan Mahavidyalaya, Halkarni.	
6	Smt. G. A. Gadhari	Member	
7	Mr. S. S. Kamble	Member	
8	Smt. D. S. Vhtakar	Member	

**Course Coordinator**Computation of Statistics using
Open Source Software**Head**

Department of Statistics

**I/C Principal**Rajarshi Chh. Shahu College,
Kolhapur