Sonopant Dandekar Shikshan Mandali's

Sonopant Dandekar Arts, V.S. Apte Commerce
& M.H. Mehta Science College, Palghar

Department of Mathematics

Presents

Certificate Course in Statistical Methods using R-Software

Academic Year: 2022-23

Certificate Course in Statistical Methods using R-Software

Programme	**Statistical Methods Using R-tool**
Objectives	The main objective of this course is to introduce the students with the programming language R and its applications in Statistics using R-tool Some important objectives of this course are: 1) To familiarize the students with basic concepts of Statistics including different sampling methods. 2) To develop the ability to analyse Statistical data through R software. 3) To learn computational skills to implement various statistical inferential approaches. 4) To develop knowledge and understanding of applications of Statistics to Science, Commerce, Business and Economics using R tool. 5) To be able to use and apply R software in their field and industry to solve the real life problems. 6) Be life-long learners who are able to expand Independently their statistical expertise when needed.
Duration of Training	40 sessions (Each session of 1 hour)
Syllabus Committee	• Prof. Dipali Mali (Course coordinator) • Prof. Swetha Iyer (Guest lecturer, Annasaheb Vartak College, Computer Science Dept., Vasai.) • Prof. Shirin Memon (Assistant professor, Mathematics Dept.) • Prof. Nidhi Mali (Assistant professor, Mathematics Dept.) • Prof. Ishrat Gawandi (Assistant professor, Mathematics Dept.) • Prof. Husnawaz Contractor (Assistant professor, Mathematics Dept.)
Course Fees	Rs. 200/-
Eligibility	• Minimum HSC passed from any stream. • Degree students of Commerce/ Science/ IT/ CS/ BMS/ BAF/ BBI.

Testing	- Assignments will be given topic wise and assessed time to time. - Total evaluation will be out of 100 marks. Written Test : 40 marks Practical Exam : 40 marks Assignments : 20 marks
Certificate	After successful completion of the course, participants will get certificate from college.
Advisory Committee	1) Dr. Kiran Save (Principal) 2) Prof. Mahesh Deshmukh (IQAC Coordinator) 3) Mrs. Dipali Mali (Course Coordinator, Mathematics dept.)

Index

Proposal

PROPOSAL

Certificate Course in
Statistical Methods using R-Software

Programme	Statistical Methods Using R-tool
Objectives	The main objective of this course is to introduce the students with the programming language R and its applications in Statistics using R-tool Some important objectives of this course are: 1) To familiarize the students with basic concepts of Statistics including different sampling methods. 2) To develop the ability to analyse Statistical data through R software. 3) To learn computational skills to implement various statistical inferential approaches. 4) To develop knowledge and understanding of applications of Statistics to Science, Commerce, Business and Economics using R tool. 5) To be able to use and apply R software in their field and industry to solve the real life problems. 6) Be life-long learners who are able to expand independently their statistical expertise when needed.
Duration of Training	40 sessions (Each session of 1 hour)
Syllabus Committee	• Prof. Dipali Mali (Course coordinator) • Prof. Shirin Memon (Assistant professor, Mathematics Dept.) • Prof. Nidhi Mali (Assistant professor, Mathematics Dept.) • Prof. Ishrat Gawandi (Assistant professor, Mathematics Dept.)

	• Prof. Husnawaz Contractor (Assistant professor, Mathematics Dept.)
Testing	• Assignments will be given topic wise and assessed time to time. • Total evaluation will be out of 100 marks. Written Test : 40 marks Practical Exam : 40 marks Assignments : 20 marks
Certificate	After successful completion of the course, participants will get certificate from college.
Advisory Commiee	1) Dr. Kiran Save (Principal) 2) Prof. Mahesh Deshmukh (IQAC Coordinator) 3) Mrs. Dipali Mali (Course Coordinator, Mathematics dept.)
Course Fees	Rs. 200/-
Eligibility	• Minimum HSC passed from any stream. • Degree students of Commerce/ Science/ IT/ CS/ BMS/ BAF/BBI.

Mrs. Dipali Mali
Head &Course coordinator Dept. of
Mathematics

Dr.Kiran J. Save
(Principal)

Notice

NOTICE

Department Of Mathematics, S.D.S.M College, Palghar

CERTIFICATE COURSE IN STATISTICAL METHOD USING R-SOFTWARE

All the students of Senior College (Commerce, Science, IT, CS, BAF, BBI & BMS) are hereby informed that, Considering importance of Understanding our past and making prediction about the future, STATISTICS plays a vital role, whether it be in Projects, Science, Research, Economics, Data Analysis, Business and Management, Machine Learning or day to day life etc. The Department of Mathematics is starting a *"Certificate Course in Statistical Method Using R-Software"* from January 2023.

Enrolment for the above course should be done on or before 20th January 2023 through the Google form link given below.

For the payment of Course Fee Rs. 200/- payment link will be provided after the Completion of registration process.
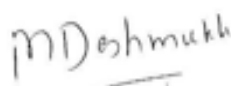
After successful completion of the course, participants will get certificate from the college.

Google form link for the Registration:
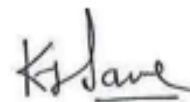
https://forms.gle/5RKRdkX2QWexEBNf8

Mrs. Dipali Mali
Head &Course coordinator
Dept. of Mathematics

Prof. Mahesh Deshmukh
(IQAC coordinator)

PRINCIPAL Dr.Kiran J. Save
(Principal)
Sonopant Dandekar Arts College,
V.S. Apte Commerce College &
M.H. Mehta Science College
PALGHAR (W.R.)
Dist. Palghar, Pin-401404

Brochure

## Certificate Course in statistical Methods using r-software

Organised by Department of Mathematics

AIM & USE:

☐ The main objective of the course is to introduce the students with the different Statistical Methods and the programming language R with its applications to Sampling Methods using R-tool.

☐ To develop the ability to analyse statistical data through R-software.

Statistical Analysis in

www.educba.com

ELIGIBILITY:

☐Degree students of Arts/Commerce/Science/IT/ CS/BMS/BAF/BBI

MATHEMATICS IS EVERYWHERE.

SYLLABUS MODULES:

1. Statistics – Meaning and Scope, Frequency Distribution.

2. Measures of Central Tendency. Measures of Dispersion, Correlation & Regression Analysis.

3. Random Variable and Probability Distribution.

4. Sampling Theory.

5. Practical : Correlation Analysis, Regression Analysis, Sampling Using R-tool.

LINK FOR REGISTRATION:
https://forms.gle/UX8h2VK5zPqzcAzY8

ENQUIRY: Department of Mathematics, Sonopant Dandekar College,
Email : dipali.mali1@gmail.com
Contact Number :
Prof. Dipali Mali :-9049543079

COURSE DURATION : 3 months
TOTAL SESSIONS : 40 Sessions
(Each session of 1 hour)
COURSE FEES : Rs.200/-

SYLLABUS :

	Contents	No. of sessions
Course Content	**Statistics – Meaning and Scope.** • Definition, Meaning of Statistics • Applications of Statistics	1
	Frequency Distribution • Collection and Classification of data • Tabulation • Frequency table or Frequency Distribution • Cumulative Frequency Distribution	1
	Measures of Central Tendency • Objects of Measures of Central Tendency • Types of Measures of Central Tendency for grouped and ungrouped data i) Arithmetic Mean or Arithmetic Average ii) Median iii) Mode	1
	Measures of Dispersion • Concept and idea of dispersion • Methods of measuring dispersion : Standard Deviation, Variance	1
	Correlation Analysis • Meaning • Types of correlation • Determination of correlation • Karl pearsons method of correlation coefficient • Spearman's Rank correlation coefficient	3
	Regression Analysis • Meaning • Concept of Regression equations • Slope of Regression line and its interpretation • Regression coefficient • Relation between coefficient of correlation and Regression coefficient. • Method of least squares.	3

	Random variable and its Probability Distribution • Concept of random experiment, sample space • Random variable(discrete and continuous) • Probability density function, Distribution function (discrete and continuous) Discrete probability distribution : Binomial, Poisson, Normal.	10
	Sampling Theory • Small samples : t test • Large samples : Chi test of association, F test, ANOVA one way and two way classification,Sign test, Wilcoxon signed Ranked test, Kruskal Wallis test.	10
Practical using R tool	• Correlation Analysis • Regression Analysis • Sampling Theory	10
Certificate	Every participating candidate will be issued a certificate atthe completion of training programme successfully**.**	
Advisory Committee	1) Dr.Kiran Save (Principal) 2) Prof. Mahesh Deshmukh (IQAC Coordinator) 3) Prof. Dipali Mali (Head, Mathematics Dept.)	

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

Department of Mathematics

CERTIFICATE COURSE
Statistical Methods Using R – tool

List of the Students Enrolled

Sr. No.	Name of the Students
1	Mistry Aayush Kirtikumar Dharmishthaben
2	Nawabali Kismatali Nawabali Safakunnish
3	Sahane Payal Ganesh Sarika
4	Yadav Hariom Rajbahadur Sudamadevi
5	Singh Ashwani Urmila
6	Yadav Vishal Ramjanam Saroj
7	Yadav Vikas Ramkishan Geeta
8	Yadav Amit Mohan Bindu
9	Shirole Rahul Balasaheb Vaishali
10	Govind Vidyashri Vinayak Ujwala
11	Jadhav Jyoti Kashinath Pramila
12	Tiwari Sangya Surya Narayan Kanchan
13	Tejani Zeba Ashraf Sahenaz
14	Shaikh Shafin Akhlaque Sagda
15	Salkar Kiran Sadya Ranji
16	Gangoda Pramod Jatrya Bharti

17	Ghatal Vaibhav Ramal Savita
18	Gavali Rutik Ramesh Kalavati
19	Khan Husna Mohiuddin Kalimunnisha
20	Khan Sadika Atikullah Nahida
21	Pachalkar Sonali Vasudev Mangala
22	Singh Sunil Vishnu Seeta
23	Yadav Vishal Rajesh Kumar Bindu
24	Shaha Nisha Loknath Sangita
25	Sahu Savita Santosh Imarati Devi
26	Desle Harshita Ravindra Rakhi
27	Luckyraj Niraj Singh Rinku
28	Yadav Priyanshu Rangbahadur Kiran
29	Varma Nitish Mundrika Sugandha
30	Yadav Pankaj Binda
31	Singh Abhishek Randhir Singh Shashikala
32	Suthar Dipak Devilal

TIME TABLE

SR. NO.	DATE	TIME	NO. OF HOURS	TOPIC
1.	21/01/2023	1.00 – 3.00 PM	2	• Statistics – Meaning and Scope. • Frequency Distribution
2.	27/01/2023	1.00 – 3.00 PM	2	• Measures of Central Tendency • Measures of Dispersion
3.	28/01/2023	1.00 – 3.00 PM	2	Correlation Analysis
4.	03/02/2023	1.00 – 3.00 PM	2	• Correlation Analysis • Regression Analysis
5.	04/02/2023	1.00 – 3.00 PM	2	Regression Analysis
6.	10/02/2023	1.00 – 3.00 PM	2	Random variable and its Probability Distribution
7.	11/02/2023	1.00 – 3.00 PM	2	Random variable and its Probability Distribution
8.	16/02/2023	1.00 – 3.00 PM	2	Random variable and its Probability Distribution
9.	17/02/2023	1.00 – 3.00 PM	2	Random variable and its Probability Distribution
10	23/02/2023	1.00 – 3.00 PM	2	Random variable and its Probability Distribution
11	24/02/2023	1.00 – 3.00 PM	2	Sampling Theory
12	28/02/2023	10.00 – 12.00 PM	2	Sampling Theory
13	01/03/2023	10.00 – 12.00 PM	2	Sampling Theory
14	02/03/2023	10.00 – 12.00 PM	2	Sampling Theory
15	03/03/2023	10.00 – 12.00 PM	2	Sampling Theory
16	06/03/2023-04/05/2023	10.00 – 12.00 PM	10	PRACTICAL

Students Attendance List

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	21/01/2023 1:00-2:00pm	21/01/2023 2:00-3:00pm	27/01/2023 1:00-2:00pm	27/01/2023 2:00-3:00pm	28/01/2023 1:00-2:00pm	28/01/2023 2:00-3:00pm	03/02/2023 1:00-2:00pm	03/02/2023 2:00-3:00pm	04/02/2023 1:00-2:00pm	04/02/2023 2:00-3:00pm
1	Mistry Aayush Kishikumar	Aayush	Aayush	Aayush	Aayush	Aayush	Aayush	Aayush	Aayush		
2	Navnath Kismat-ali Navnath ali	Chun	Chun	Chun	Chun	Chun	Chun	Chun	Chun		
3	Sahane Payal Ganesh	Poshawu	Poshawu	Poshawu	Brahus	Brahus	Brahus	Brahus	Brahus	Brahus	
4	Yadav Hariom Rajbahadur	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom		
5	Singh Ashwani Vimla	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh		
6	Yadav Vishal Ramjanam	Key	Key	Key	Key	Key	Key	Key	Key	Key	
7	Yadav Vikas Ramkishan	Vikas	Vikas	Vikas	Vikas		Vikas	Vikas	Vikas	Vikas	
8	Yadav Amit Mohan	Amit	Amit	Amit	Amit	Amit	Amit	Amit	Amit	Amit	
9	Bhosale Rahul Balasaheb	Rahul S.	Rahul S.	Rahul S.	Rahul S.			Rahul S.	Rahul S.	Rahul S.	
10	Govind Vidyashwij Vinayak	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	21/01/23 1·00-2·00pm	21/01/23 2·00-3·00pm	27/01/23 1·00-2·00pm	27/01/23 2·00-3·00pm	28/01/2023 1·00-2·00pm	28/01/2023 2·00-3·00pm	05/02/2023 1·00-2·00pm	05/02/2023 2·00-3·00pm	04/02/2023 1·00-2·00pm	04/02/2023 2·00-3·00pm
11	Jadhav Jyoti Kashinath	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	
12	Tiwari Sangya Narayan	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv		
13	Tejali Zeba Ashraf	Zeba Jejani	Zeba Jejani		Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani		
14	Shaikh Shafin Akhlaque	S	S		S	S	S	S	S		
15	Salkar Kiran Sadya	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar		
16	Gangoda Pramod Tatoya	pramod	pramod	pramod	pramod	pramod	pramod	pramod	pramod		
17	Ghaisal Vaibhav Rawal	Vaibhav	Vaibhav		Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav		
18	Gavali Rutik Ravesh	Ruli	Ruli	Ruli	Ruli	Ruli	Ruli	Ruli	Ruli		
19	Khan Husna Mohiuddin	Husn	Husn	Husn	Husn	Husn			Husn	Husn	
20	Khan Sadika Atikullah	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika				

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.
Attendance of students

Sr. No.	Name of student /Date	21/01/2023 1:00-2:00 PM	21/01/2023 2:00-3:00 PM	27/01/2023 1:00-2:00 PM	27/01/2023 2:00-3:00 PM	28/01/2023 1:00-2:00 PM	28/01/2023 2:00-3:00 PM	03/02/2023 1:00-2:00 PM	03/02/2023 2:00-3:00 PM	04/02/2023 1:00-2:00 PM	04/02/2023 2:00-3:00 PM
21	Pachalkar Sonali Vasudev	Pachalkar	Pachalkar	Pachalkar	Pachalkar	Pachalkar	Pachalkar	Pachalkar			
22	Singh Sunil Vishnu	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh
23	Yadav Vishal Rajesh	MY	MY	MY	MY	MY	MY	MY	MY	MY	MY
24	Shisha Nisha Loknath	Nisha	Nisha		Nisha	Nisha	Nisha	Nisha	Nisha	Nisha	Nisha
25	Sahu Savita Santosh	Savita	Savita	Savita	Savita	Savita	Savita	Savita	Savita	Savita	Savita
26	Desle Harshita Ravindra	lokp	lokp	lokp	lokp	lokp	lokp	lokp	lokp	lokp	lokp
27	Lukya Niraj Singh	Sef	Sef	Sef	Sef	Sef	Sef	Sef	Sef	Sef	Sef
28	Yadav Priyanshu Singh	Yadav	Yadav	Yadav	Yadav			Yadav	Yadav	Yadav	Yadav
29	Varsha Nitin Rangbahadur Mundevka	Varsha	Varsha	Varsha	Varsha	Varsha	Varsha	Varsha	Varsha	Varsha	Varsha
30	Yadav Pankaj Binda	Pankaj	Pankaj	Pankaj	Pankaj	Pankaj	Pankaj			Pankaj	Pankaj

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	21/01/2023 1:00-2:00 pm	21/01/2023 2:00-3:00 pm	27/01/2023 1:00-2:00 pm	27/01/23 2:00-3:00 pm	28/01/23 1:00-2:00 pm	28/01/2023 2:00-3:00 pm	03/02/2023 1:00-2:00 pm	03/02/23 2:00-3:00 pm	04/02/23 1:00-2:00 pm	04/02/23 2:00-3:00 pm
31	Singh Abhishek Randhir	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh	Singh
32	Dipak Suthar	DE	DE	DE	DE	DE	DE	DE	DE	DE	DE
33											
34											
35											
36											
37											
38											
39											
40											

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	10/02/2023 1·00-2·00 pm	10/02/2023 2·00-3·00pm	11/02/2023 1·00pm - 2·00pm	11/02/2023 2·00-3·00pm	16/02/2023 1·00-2·00pm	16/02/2023 2·00-3·00pm	17/02/2023 1·00-2·00pm	17/02/2023 2·00-3·00pm	23/04/2023 1·00-2·00pm	23/04/2023 2·00-3·00pm
1	Mishru Ayush Kishtkumar	Aayush	Aayush	Aayush	Aayush	Aayush			Aayush	Aayush	
2	Nawabali Kismatali Nawabali	Rohana	Rohana	Chris	Chris	Chris	Chris	Chris	Chris		
3	Sahane Payal Ganesh	Rohana	Rohana	Rohana	Rohana	Rosehara	Rosehara	Rosehara	Rosehara	Rohana	
4	Yadav Hariom Rajbahadur	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	
5	Singh Ashwani Urmila	D·singh	D·singh	D·singh	D·singh	D·singh	D·singh	D·singh	D·singh	D·singh	
6	Yadav Vishal Ramjanani	Key	Key	Key	Key	Key	Key	Key	Key	Key	
7	Yadav Vikas Ramkishan	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas		
8	Yadav Amit Mohan	Amit	Amit			Amit	Amit	Amit	Amit	Amit	
9	Shisole Rahul Balasaheb	Rahul S.	Rahul S.			Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	
10	Govind Vidyashou Vinayak	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	10/02/2023 1.00-2.00pm	10/02/2023 2.00-3.00pm	11/02/2023 1.00-2.00 pm	11/02/2023 2.00-3.00 pm	16/02/2025 1.00-2.00 pm	16/02/2025 2.00-3.00pm	17/02/2023 1.00-2.00pm	17/02/2023 2.00-3.00pm	25/02/2023 1.00-2.00pm	25/02/2023 2.00-3.00 pm
11	Jadhav Jyoti Kashinath	Akidhu	Akidhu	Akidhu	Akidhu	Akidhu	Akidhu	Akidhu	Akidhu	Akidhu	
12	Tiwari Sangya Surya Narayan	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	Shiv	
13	Tejani Zeba Ashraf	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	
14	Shaikh Shoeb	S	S	S	S	S	S	S	S	S	
15	Akhlaque Salkar kiran Sadiya	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	
16	Gangoda Pramod Jatoliya	pravzot	pravzot	pravzot	pravzot	pravzot	pravzot		pravzot	pravzot	
17	Ghatal Vaibhav Ramal	Ghatal	Ghatal	Ghatal	Ghatal	Ghatal	Ghatal	Ghatal			
18	Gavali Rutik Ramesh	Suli	Suli	Suli	Suli		Suli	Suli	Suli		
19	Khan Husna Mohiuddin	Husn	Husn	Husn	Husn	Husn	Husn	Husn	Husn	Husn	
20	Khan Sadika Atikullah	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	10/02/2023 1:00-2:00 pm	10/02/2023 2:00-3:00 pm	11/02/2023 1:00-2:00 pm	11/02/2023 2:00-3:00 pm	16/02/2023 2:00-2:00 pm	16/02/2023 2:00-3:00 pm	17/02/2023 1:00-2:00 pm	17/02/2023 2:00-3:00 pm	25/02/2023 1:00-2:00 pm	23/02/2023 2:00-3:00 pm
21	Pachalkar Sonali Yashoday	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_				
22	Singh Sunil Vishnu	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_				
23	Yadav Vishal Rajesh	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_		
24	Shaha Nisha Loknath	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_		
25	Sahu Savita Santosh	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_			_signature_	_signature_
26	Desle Harshita Ravindra	_signature_	_signature_	_signature_	_signature_	_signature_				_signature_	_signature_
27	Luckyray Niraj Singh	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_			_signature_	_signature_
28	Yadav Priyanshu Singh	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_			_signature_	_signature_
29	Vastha Nitish Mundrika	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_	_signature_
30	Yadav Pankaj Binda	_signature_	_signature_	_signature_	_signature_	_signature_		_signature_		_signature_	_signature_

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	10/02/2023 1·00-2·00 pm	10/02/2023 2·00-3·00 pm	11/02/2023 1·00-2·00 pm	11/02/2023 2·00-3·00 pm	16/02/2023 1·00-2·00 pm	16/02/2023 2·00-3·00 pm	17/02/2023 1·00-2·00 pm	17/02/2023 2·00-3·00 pm	25/02/2023 1·00-2·00 pm	25/02/2023 2·00-3·00 pm
31	Singh Abhishek Randhir										
32	Dipak Suthar	Di	Di	Singh Di	Singh Di	Singh Di	Singh Di	Singh Di	Singh Di	Singh Di	Singh Di
33											
34											
35											
36											
37											
38											
39											
40											

Sonopant Dandekar Shikshan Mandali's

SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE

AND M.H.MEHTA SCIENCE COLLEGE,

Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	24/02/23 1:00 - 2:00 pm	24/02/23 2:00 - 3:00 pm	28/02/23 10:00 - 11:00 am	28/02/23 11:00 - 12:00 pm	01/03/23 10:00 - 11:00 am	01/03/23 11:00 - 12:00 pm	02/03/23 10:00 - 11:00 am	02/03/23 11:00 - 12:00 pm	03/03/23 10:00 - 11:00 am	03/03/23 11:00 - 12:00 pm
1	Mistry Ayush Kirtikumar	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush
2	Nawabali Kismat ali Sajakunnish	Rhul	Rhul	Rhul	Rhul	Rhul	Rhul	Rhul	Rhul	Rhul	Rhul
3	Sahane Payal Ganesh	Psahane	Psahane	Psahane	Sahane	Psahane	Psahane	Psahane	Psahane	Psahane	Psahane
4	Yadav Hariom Rajbahadur	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom
5	Singh Ashwini Urmila			Asingh	Asingh	Asingh	Asingh	Asingh	Asingh		
6	Yadav Vishal Ramjanam	Vey	Vey	Vey	Vey	Vey	Vey	Vey	Vey	Vey	Vey
7	Yadav Vikas Rambishan	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas
8	Shirole Rahul Balasaheb	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.
9	Govind Vidyashri Vinayak	Govind	Govind	Govind	Govind	Govind	Govind			Govind	Govind
10	Jadhav Jyoti Kashinath	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

DEPARTMENT OF MATHEMATICS

Attendance of students

Sr. No.	Name of student /Date	24/02/23 1:00 – 2:00 pm	24/02/23 2:00 – 3:00 pm	28/02/23 10:00 – 11:00 am	28/02/23 11:00 – 12:00 am	01/03/23 10:00 – 12:00 am	01/03/23 11:00 – 12:00 pm	02/03/23 10:00 – 11:00 am	02/03/23 11:00 – 12:00 pm	03/03/23 10:00 – 11:00 am	03/03/23 11:00 – 12:00 pm
11	Tiwari Sangya Surya Narayan	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi	Shiwi
12	Tejani Zeba Ashraf	Zeba Jejani	Zeba Jejani			Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	
13	Shaikh Shajin Akhlaque	S	S	S	S	S	S	S	S	S	S
14	Salkar Kiran Sadya	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar	Shalkar
15	Gangoda Pramod Jitrya	Pramod	Pramod	Pramod	Pramod	Pramod	Pramod			Pramod	Pramod
16	Chatal Vaibhav Ramal	Chatal	Chatal	Chatal	Chatal	Chatal	Chatal	Chatal	Chatal	Chatal	Chatal
17	Gavali Rutik Ramesh	Puli	Puli	Puli	Puli	Puli	Puli	Puli	Puli		
18	Khan Husna Mohiuddin	Husna	Husna	Husna	Husna	Husna	Husna	Husna	Husna	Husna	
19	Khan Sadika Atikullah	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika			
20	Pachalkar Sonali Vasudev	Sonali	Sonali	Sonali			Sonali	Sonali	Sonali		Sonali

Sonopant Dandekar Shikshan Mandali's

SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	24/02/23 1:00-2:00 pm	24/02/23 2:00-3:00 pm	28/02/23 10:00-11:00 am	28/02/23 11:00-12:00 pm	01/03/23 10:00-11:00 am	01/03/23 11:00-12:00 pm	2/03/23 10:00-11:00 am	02/03/23 11:00-12:00 pm	03/03/23 10:00-11:00 am	03/03/23 11:00-12:00 pm
21	Singh Sunil Vishnu	Singh	Singh	Singh	Singh		Singh	Singh	Singh	Singh	Singh
22	Yadav Vishal Rajesh	MY	MY	MY	MY	MY	MY	MY	MY	MY	MY
23	Shaha Nisha Loknath	Nisha	Nisha	Nisha	Nisha	Nisha	Nisha			Nisha	Nisha
24	Sahu Savita Santosh	Savita	Savita	Savita	Savita	Savita	Savita		Savita	Savita	Savita
25	Deele Harshita Ravindra	DHP	DHP	DHP	DHP			DHP	DHP	DHP	DHP
26	Ludyraj Niraj Singh	Sgs	Sgs	Sgs	Sgs	Sgs	Sgs	Sgs	Sgs	Sgs	Sgs
27	Yadav Priyanshu Rangbahadur	Yadav	Yadav			Yadav	Yadav	Yadav	Yadav	Yadav	Yadav
28	Varma Nitish Mundrika	Varma	Varma	Varma	Varma	Varma	Varma	Varma	Varma	Varma	Varma
29	Yadav Pankaj Binda	Pankaj	Pankaj	Pankaj	Pankaj	Pankaj	Pankaj		Pankaj	Pankaj	Pankaj
30	Singh Abhishek Randhir	Rsingh	Rsingh		Rsingh	Rsingh	Rsingh	Rsingh	Rsingh	Rsingh	Rsingh

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	24/02/23 1:00-2:00 pm	24/02/23 2:00-3:00 pm	28/02/23 10:00-11:00 am	28/02/23 11:00-12:00 pm	01/03/23 10:00-11:00 am	01/03/23 11:00-12:00 pm	02/03/23 10:00-11:00 am	02/03/23 11:00-12:00 pm	03/03/23 10:00-11:00 am	03/03/23 11:00-12:00
31	Yadav Amit Mohan Bindu	Amit	Amit			Amit	Amit	Amit	Amit	Amit	Amit.
32	Deepak Suthar	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*	*(sign)*
33											
34											
35											
36											
37											
38											
39											
40											

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	06/03/23 10:00-11:00 am	06/03/23 11:00-12:00 pm	08/03/23 10:00-11:00 am	08/03/23 11:00-12:00 pm	28/04/23 10:00-11:00 am	28/04/23 11:00-12:00 pm	03/05/23 10:00-11:00 am	03/05/23 11:00-12:00 pm	04/05/23 10:00-11:00 am	04/05/23 11:00-12:00 pm
1	Mistry Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush	Ayush
2	Nawabali Kismatali	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu	Bhavu
3	Sahane Payal	Prahans	Prahans	Prahans	Prahans	Prahans	Prahans	Prahans	Prahans	Prahans	Prahans
4	Yadav Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom	Hariom
5	Singh Ashwani	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh	Asingh
6	Yadav Vishal	Vishal	Vishal	Vishal	Vishal	Vishal	Vishal				
7	Yadav Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas	Vikas
8	Shirole Rahul	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.	Rahul S.
9	Govind Vidyashri	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind	Govind
10	Jadhav Jyoti	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav	Jadhav

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS
CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.
Attendance of students

Sr. No.	Name of student /Date	08/02/23 10:00-11:00 am	06/02/23 11:00-12:00 pm	08/03/23 10:00-11:00 am	08/03/23 11:00-12:00 pm	28/4/23 10:00-11:00	28/4/23 11:00-12:00	03/05/23 10:00-11:00	3/05/23 11:00-12:00	4/05/23 10:00-11:00	4/05/23 11:00-12:00
11	Tiwari Sangya	Shivi	Shivi			Shivi	Shivi	Shivi	Shivi	Shivi	Shivi
12	Tejani Zeba	Zeba Jejani	Zeba Jejani			Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani	Zeba Jejani
13	Shaikh Shafin	S.	S.	S.	S.	S.	S.	S.	S.	S.	S.
14	Salkar Kiran	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar	Salkar
15	Gangoda Pramod	Pramod	Pramod		Pramod	Pramod	Pramod	Pramod	Pramod	Pramod	Pramod
16	Ghotal Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav	Vaibhav
17	Gavali Ritik	Guli	Guli	Guli	Guli	Guli	Guli	Guli	Guli	Guli	Guli
18	Khan Husna	Husna	Husna	Husna		Husna	Husna	Husna	Husna	Husna	Husna
19	Khan Sadika	Sadika	Sadika		Sadika	Sadika	Sadika	Sadika	Sadika	Sadika	Sadika
20	Pachalkar Sonali	Rachels	Rachels	Rachels		Rachels	Rachels	Rachels	Rachels	Rachels	Rachels

Sonopant Dandekar Shikshan Mandali's
SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE
AND M.H.MEHTA SCIENCE COLLEGE,
Palghar, Dist- Palghar, Pin- 401 404.

DEPARTMENT OF MATHEMATICS

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

Attendance of students

Sr. No.	Name of student /Date	06/03/23 10:00-11:00 am	06/03/23 11:00-12:00 pm	08/03/23 10:00-11:00 am	08/03/23 11:00-12:00 pm	28/04/23 10:00-11:00 am	28/04/23 11:00-12:00 pm	03/05/23 10:00-11:00 am	03/05/23 11:00-12:00 pm	04/05/23 10:00-11:00 am	04/05/23 11:00-12:00 pm
21	Singh Sunil	Singh	Singh	Singh	Singh	Singh		Singh	Singh	Singh	
22	Yadav Vishal	MY	MY	MY	MY	MY		MY	MY	MY	
23	Shaha Nisha	Nisha	Nisha	Nisha	Nisha	Nisha		Nisha	Nisha	Nisha	
24	Sahu Savita	Savita	Savita	Savita	Savita	Savita		Savita	Savita		
25	Desle Harshita	lohp	lohp	lohp	lohp	lohp		lohp	lohp	lohp	
26	Luckyraj Singh	SgS	SgS	SgS	SgS	SgS		SgS	SgS	SgS	
27	Yadav Priyanshu	Popolu	Popolu	Popolu	Popolu	Popolu		Popolu	Popolu	Popolu	
28	Varma Nitish	Nivarma	Nivarma	Nivarma	Nivarma			Nivarma	Nivarma		
29	Yadav Pankaj	Pankaj	Pankaj	Pankaj	Pankaj			Pankaj	Pankaj	Pankaj	
30	Singh Abhishek	Singh	Singh	Singh	Singh	Singh					Singh

Sonopant Dandekar Shikshan Mandali's

SONOPANT DANDEKAR ARTS, V.S.APTE COMMERCE AND M.H.MEHTA SCIENCE COLLEGE,

Palghar, Dist- Palghar, Pin- 401 404.

CERTIFICATE COURSE IN STATISTICAL METHODS USING R-SOFTWARE, 2022-23.

DEPARTMENT OF MATHEMATICS

Attendance of students

Sr. No.	Name of student /Date	06/03/23 10:00-11:00 am	06/03/23 11:00-12:00 pm	08/03/23 10:00-11:00 am	08/03/23 11:00-12:00 pm	28/04/23 10:00-11:00 am	28/04/23 11:00-12:00 pm	03/05/23 10:00-11:00 am	03/05/23 11:00-12:00 pm	04/05/23 10:00-11:00 am	04/05/23 11:00-12:00 pm
31	Yadav Amit	Amit	Amit	Amit	Amit	Amit				Amit	Amit
32	Dipak Suthar	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ	Dₑ
33											
34											
35											
36											
37											
38											
39											
40											

Teachers Attendance Sheet

DEPARTMENT OF MATHEMATICS
Certificate Course in Statistical Methods Using R-Tool, 2022-2023
Teachers Attendance Record

Sr. No.	Date	Time	Name of the Teacher	Topic Taught	Signature
1.	21/01/23	01:00 - 2:00 pm	Husnawaz Contractor	Introduction to certificate Course in Statistical Methods	
2.	21/01/23	02:00 - 03:00 pm	Nidhi Mali	Frequency Distribution	
3.	27/01/23	1:00 - 2:00 pm	Nidhi Mali	Measures of Central Tendency	
4.	27/01/23	2:00 - 3:00 pm	Shirin Hadiya	Measures of Dispersion	
5.	28/01/23	1:00 - 2:00 pm	Husnawaz Contractor	Introduction to Correlation Analysis	
6.	28/01/23	2:00 - 3:00 pm	Husnawaz Contractor	Karl Pearson's Correlation Co-efficient	
7.	03/02/23	1:00 - 2:00 pm	Husnawaz Contractor	Spearman's Rank Correlation Coefficient	
8.	03/02/23	2:00 - 3:00 pm	Husnawaz Contractor	Introduction to Regression Analysis	

Sonopant Dandekar Shikshan Mandali's

Sonopant Dandekar Arts, V. S. Apte Commerce
& M. H. Mehta Science College, Palghar
(Best College - University of Mumbai)
(Amongst Top 100 Colleges in India by 'India Today - MDRA Survey 2019')

DEPARTMENT OF MATHEMATICS
Certificate Course in Statistical Methods Using R-Tool, 2022-2023
Teachers Attendance Record

No.	Date	Time	Teacher	Topic	Sign
9.	04/02/23	1:00 – 2:00 pm	Husnawaz Contractor	Regression Equation of x on y and y on x	
10.	04/02/23	2:00 – 3:00 pm	Husnawaz Contractor	Regression Co-efficient	
11.	10/02/23	1.00 – 2.00 pm	Nidhi Mali	Random Variable & its Probability Distribution	
12.	10/02/23	2.00 – 3.00 pm	Nidhi Mali	Concept of Random Experiment/ trail and possible outcomes	
13.	11/02/23	1.00 – 2.00 pm	Nidhi Mali	Sample Space & Probability Distribution	
14.	11/02/23	2.00 – 3.00 pm	Nidhi Mali	Expectation & Variance of Random Variable	
15.	16/02/23	1.00 – 2.00 pm	Nidhi Mali	Random Variable & its Probability	
16.	16/02/23	2.00 – 3.00 pm	Shirin Memon	Binomial Distribution	
17.	17/02/23	1.00 – 2.00 pm	Shirin Memon	Binomial Distribution	

DEPARTMENT OF MATHEMATICS
Certificate Course in Statistical Methods Using R-Tool, 2022-2023
Teachers Attendance Record

18.	17/02/23	2.00-3.00 pm	Shirin Memon	Poisson Distribution	
19.	23/02/23	1.00-2.00 pm	Shirin Memon	Normal Distribution	
20.	23/02/23	2.00-3.00 pm	Shirin Memon	Normal Distribution	
21.	24/02/23	1.00-2.00 pm	Dipali Mali	Sampling Theory	
22.	24/02/23	2.00-3.00 pm	Dipali Mali	Z-test	
23.	28/02/23	10.00-11.00 Am	Dipali Mali	t-test	
24.	28/02/23	11.00-12.00 pm	Dipali Mali	t-test	
25.	0/103/23	10.00-11.00 Am	Dipali Mali	chi test of association	
26.	0/103/23	11.00-12.00 pm	Dipali Mali	chi test if association	

Sonopant Dandekar Arts, V. S. Apte Commerce
& M. H. Mehta Science College, Palghar

(Best College - University of Mumbai)
(Amongst Top 100 Colleges in India by 'India Today - MDRA Survey 2019')

DEPARTMENT OF MATHEMATICS
Certificate Course in Statistical Methods Using R-Tool, 2022-2023
Teachers Attendance Record

No.	Date	Time	Teacher	Topic	Sign
27.	02/03/23	10:00 – 11:00 Am	Dipali Mali	F test	
28.	02/03/23	11:00 – 12:00 pm	Dipali Mali	F test	
29.	03/03/23	10:00 – 11:00 Am	Dipali Mali	ANOVA one way classification	
30.	03/03/23	11:00 – 12:00 pm	Dipali Mali	ANOVA two way classification.	
31.	06/03/2023	10:00 – 11:00 am	Ishrat Gawandi	r tool practical on Correlation Analysis	
32.	06/03/2023	11:00 – 12:00 pm		r tool practical on Regression Analysis.	06/03/23
33.	08/03/2023	10:00 – 11:00 am	Ishrat	r tool practical based on correlation Analysis	
34.	08/03/2023	11:00 – 12:00 pm	Gawandi	r tool practical based on Regression Analysis.	08/03/23
35.	28/04/2023	10:00 – 11:00 am	Ishrat Gawandi	r tool practical based on t-test	28/4/23

Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar

(Best College - University of Mumbai)

(Amongst Top 100 Colleges in India by 'India Today - MDRA Survey 2019')

DEPARTMENT OF MATHEMATICS

Certificate Course in Statistical Methods Using R-Tool, 2022-2023

Teachers Attendance Record

36.	28/04/2023	11:00 – 12:00pm	r tool practical based on F test	28/4/23
37.	03/05/2023	10:00 – 11:00 am	r tool practical based on ANOVA test	03/5/23
38.	03/05/2023	11:00 – 12:00pm	r tool practical based on Wilcoxon Singed Ranked test	
39.	04/05/2023	10:00 – 11:00 am	r tool practical based on Kruskal Wallis test	04/05/23
40.	04/05/2023	11:00 – 12:00 pm	r tool practical based on Chi-Square test of association.	

Question Paper for Practical Examination

Certificate Course

STATISTICAL METHODS USING R – TOOL

Practical Examination

	Solve any **FOUR:**					[40 Marks]
1.	The time in minutes that a patient has to wait in a consulting room is recorded for 12 patients: 15,17,24,25,20,21,32,28,12,25,24,26 Use Wilcoxon sign rank test to check whether the median waiting time is more than 20 minutes at 5% los.					
2.	The following data gives the effect of a treatment that are as follows:					

A	2	3	7	2	6
B	10	8	7	5	10
C	10	13	14	13	15

Test the hypothesis that all treatments are equally effective.

3.	The following are two independent samples from two normal populations. Obtain 95% confidence interval for the ratio of the population variances. I: 25, 28, 26, 22, 22, 29, 31, 31, 26, 31 II: 30, 25, 31, 32, 23, 25, 36, 28, 31, 32, 32, 27, 31, 28, 24.	
4.	The height of six randomly chosen soldiers are in inches: 63, 65, 68, 69, 71 and 72. Those of ten randomly chosen sailors are: 61, 62, 65, 66, 69, 69, 70, 71, 72, 73. Is there evidence that soldiers are taller than sailors at 10% level of significance?	
5.	Let X denotes number of heads in an experiment of tossing of a coin and $X \sim B(10, 0.5)$. Calculate i. $P(X = 5)$ ii. $P(X \leq 6)$ iii. $P(X > 7)$.	
6.	Let $X \sim N(50, 100)$. Find i. $P(X \leq 70)$ ii. $P(X > 65)$ iii. $P(30 < X < 60)$	
	(Code 5 Marks + Execution and Output 5 Marks)	

Assignments

Certificate Course Assignments 2022-23

Department of Mathematics

Certificate Course in Statistical Methods using R-Software

ASSIGNMENT NO 1

i. Find the arithmetic mean for the following data. Representing marks of 80 students.

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	12	13	21	19	15

ii. Find the mode for the following data

Income in Rs.	2000-4000	4000-6000	6000-8000	8000-10000	10000-12000
No. of persons	16	34	60	37	13

iii. Find the median for the following data

Income in Rs.	15000-17000	17000-19000	19000-21000	21000-23000	23000-25000	25000-27000
No. of families	70	100	120	150	100	60

iv. Find the median for the following set of observations

53, 42, 30, 55, 75, 50, 32, 39, 62.

v. Find the median for the following data:

Class Interval	5 - 9	10 - 14	15 - 19	20 - 24	25 - 29	30 - 34	35 - 39
Frequency	8	18	27	21	10	8	7

Find the arithmetic mean for the following set of observations

125, 132, 127, 139, 140, 142, 137, 122, 120, 130

vi. The following table gives the distribution of daily wages of 100 employees of a company. Find the average wages.

Daily wages in Rs.	50-55	55-60	60-65	65-70	70-80	80-100
No. of Employees	10	22	30	20	12	6

vii. Find the mean for the following sets of Observations:

x	12	14	16	18	20	22
f	5	10	15	12	8	3

viii. Determine mode for the following data relating to basic pay of 15 workers in a factory.

3500, 4000, 4500, 4000, 5500, 6000, 8000, 4000, 3000, 2500, 4000, 4000, 5000, 6500, 7000

ix. Find the mode of the following data.

Daily wages in Rs.	200-300	300-400	400-500	500-600	600-700
No. of Employees	15	26	36	20	10

ASSIGNMENT NO 2

i. A biased coin is tossed thrice. X denotes the number of heads in the three tosses. If probability distribution of X is as follows

$$P(x = x) = \frac{5}{16} ; x = 0,1$$

$$= \frac{1}{8} ; x = 2$$

$$= \frac{1}{4} ; x = 3$$

$$= 0; otherwise$$

Find: $E(X)$ and $V(X)$

ii. From a well-shuffled pack of cards, a card is drawn at random, find the probability that the card drawn is (i) an ace, (ii) a heart card, (iii) a king of hearts.

iii. A box contains 20 tickets numbered 1 to 20. A ticket is drawn at random from the box. Find the probability that the number on the ticket drawn is (i) divisible by 3 (ii) not divisible by 5

iv. Find the approximate probability distribution for X from the following frequency distribution:

X	1	3	4	5	8	10
Frequency	19	33	42	61	32	13

v. If X is the number appearing on the uppermost face of a fair dice, Find $E(X)$ and $V(X)$

vi. If X is the random variable having a probability mass function

$$P(x = x) = \frac{x}{8}; x = 0,1$$

$$= \frac{k}{4}; x = 2$$

$$= \frac{kx}{16}; x = 3$$

Find the Value of k and $E(X)$.

vii. If probability distribution of X is as follows

$$P(x = x) = \frac{1}{16}; x = -1,3$$

$$= \frac{3}{8}; x = 0$$

$$= \frac{1}{4}; x = 2,4$$

$$= 0; otherwise$$

Find: $(i)P(X = 3)$ $(ii)P(X < 1)$ $(iii)P(X > 3)$

viii. A box contains 20 tickets numbered 1 to 20. A ticket is drawn at random from the box. Find the probability that the number on the ticket drawn is (i) divisible by 3 & 4 (ii) not divisible by 3 or 4

ix. Two fair dice are rolled. If X denotes the sum of the numbers appearing on the uppermost faces of the dice, find (i) P(X<4); (ii) P(3<X<7).

Assignment No.3

1. The following data relate to the age of 10 employees and the number of days which they reported sick in a month:

Age	20	30	32	35	40	46	52	55	58	62
Sick days	11	12	10	13	14	16	15	17	18	19

Calculate the Karl Pearson's Coefficient of Correlation and interpret it.

2. Two housewives, Geeta and Rita, asked to express their preferences for different kinds of detergents.

Detergents	A	B	C	D	E	F	G	H	I	J
Geeta	4	2	1	3	7	8	6	5	9	10
Rita	4	1	2	3	8	7	5	6	9	10

To what extent does the preferences of these 2 ladies go together? Find out using Spearman's Rank Correlation Coefficient.

3. An examination of eight applicants for a clerical post was taken by a firm. From the marks obtained by the applicants in the Accountancy and Statistics papers, compute rank coefficient of correlation.

Applicants	A	B	C	D	E	F	G	H
Marks in Accountancy	15	20	28	12	40	60	20	80
Marks in Statistics	40	30	50	30	20	10	30	60

4. The ranks of the same 15 students in two subjects A and B are given below, the two numbers within the brackets denoting the ranks of the same student in A and B respectively:

(1, 10), (2, 7), (3, 2), (4, 6), (5, 4), (6, 8), (7, 3), (8, 1), (9, 11), (13, 14), (10, 15), (11, 9), (11, 5), (14, 12), (15, 13)

Use Spearman's formula to find the rank correlation coefficient.

5. There seems to be a low degree of negative correlation between family income and its percentage spent on food expenditure.

6. An office contains 12 clerks. The long serving clerks feel that they should have a seniority increment based on length of service built into their salary structure. An assessment of their efficiency by their departmental manager and the personnel department produces a ranking of efficiency. This is shown below together with a ranking of their length of service. Do the data support the clerks, claim for seniority increment?

Ranking according to length of service	1	2	3	4	5	6	7	8	9	10	11	12
Ranking according to efficiency	2	3	5	1	9	10	11	12	8	7	6	4

Assignment No.4

1. Find the regression equation of x on y and hence estimate x when y = 10.

x	11	7	9	5	8	6	10	59
y	16	14	12	11	15	14	17	99

2. From the following data, find the regression equation of y on x and hence estimate y when x = 13.

X	14	10	15	11	9	12	6
Y	8	6	4	3	7	5	9

3. Calculate rank correlation coefficient for the following data giving working capital in lakhs of Rs. (x) and profit in thousands of Rs. (y) of ten companies for the year 1990- 1991.

x	15	32	25	30	35	20	19	22	27	31
y	50	70	65	72	90	58	53	57	68	74

4. From the following data, find the sales corresponding to advertising expenditure of Rs.30 lakhs using regression co-efficient.

Expenditure	10	12	15	23	20
Sales		8	6	4	3	7

5. Find the regression equation of x on y and y on x.

x	1	2	3	4	5
y	2	5	3	8	7

41

Assignment No.5

1. Find the range and coefficient of range of the following data.
   (i) 63, 89, 98, 125, 79, 108, 117, 68
   (i) 43.5, 13.6, 18.9, 38.4, 61.4, 29.8

2. If the range and the smallest value of a set of data are 36.8 and 13.4 respectively, then find the largest value.

3. Calculate the range of the following data.

Income	400-450	450-500	500-550	550-600	600-650
Number of workers		12	30	21	6

4. A teacher asked the students to complete 60 pages of a record note book. Eight students have completed only 32, 35, 37, 30, 33, 36, 35 and 37 pages. Find the standard deviation of the pages yet to be completed by them.

5. Find the variance and standard deviation of the wages of 9 workers given below:
   310, 7290, 7320, 7280, 300, 290, 320, 310, 280.

6. A wall clock strikes the bell once at 1 o' clock, 2 times at 2 o' clock, 3 times at 3 o' clock and so on. How many times will it strike in a particular day. Find the standard deviation of the number of strikes the bell make a day.

7. Find the standard deviation of first 21 natural numbers.

8. If the standard deviation of a data is 4.5 and if each value of the data is decreased by 5, then find the new standard deviation.

9. If the standard deviation of a data is 3.6 and each value of the data is divided by 3, then find the new variance and new standard deviation.

10. The rainfall recorded in various places of five districts in a week are given below.

Rainfall (in mm)	45	50	55	60	65	70
Number of places	5	13	4	9	5	4

Find its standard deviation.

Assignment No.6

1. Suppose X is the number of tails occurred when three fair coins are tossed once simultaneously. Find the values of the random variable X and number of points in its inverse images.

2. In a pack of 52 playing cards, two cards are drawn at random simultaneously. If the number of black cards drawn is a random variable, find the values of the random variable and number of points in its inverse images.

3. An urn contains 5 mangoes and 4 apples. Three fruits are taken at random. If the number of apples taken is a random variable, then find the values of the random variable and number of points in its inverse images.

4. Two balls are chosen randomly from an urn containing 6 red and 8 black balls. Suppose that we win ₹15 for each red ball selected and we lose ₹10 for each black ball selected. If X denotes the winning amount, find the values of X and number of points in its inverse images.

5. The probability density function of X is
$$f(x) = \begin{cases} x & 0 < x < 1 \\ 2 - x & 1 \le x < 2 \\ 0 & \text{otherwise} \end{cases}$$
Find (i) $P(0.2 \le X < 0.6)$ (ii) $P(1.2 \le X < 1.8)$ (iii) $P(0.5 \le X < 1.5)$

6. Compute $P(X = k)$ for the binomial distribution, B(n,p) where
   (i) $n = 6, p = 1/3, k = 3$ (ii) $n = 10, p = 1/5, k = 4$ (iii) $n = 9, p = 1/2, k = 7$

7. The probability that Mr.Q hits target at any trial is ¼. Suppose he tries at the target 10 times. Find the probability that he hits the target (i) exactly 4 times (ii) at least one time.

8. Using binomial distribution find the mean and variance of X for the following experiments
   (i) A fair coin is tossed 100 times, and X denote the number of heads.
   (ii) A fair die is tossed 240 times, and X denote the number of times that four appeared.

9. The probability that a certain kind of component will survive a electrical test is 3/4. Find the probability that exactly 3 of the 5 components tested survive.

10. A retailer purchases a certain kind of electronic device from a manufacturer. The manufacturer indicates that the defective rate of the device is 5%. The inspector of the retailer randomly picks 10 items from a shipment. What is the probability that there will be
(i) at least one defective item (ii) exactly two defective items?

ASSIGNMENT NO. 7

1) Can it be concluded that the average life span of an indian is more than 70 years, If a random sample of 100 indians has a average life span of 71.8 years with S.D of 7.8 years?

2) A college conducts both day and night classes intended to be identical. A sample of 100 day student yields examination results and a sample of 200 as under day students yields examination results as under

$\overline{X_1}$ =72.4	$S_1 = 14.8$	$N_1 = 100$
$\overline{X_1}$ =73.9	$S_1 = 17.9$	$N_1 = 209$

Are the two means statistically equal at 10% level?

3) In a random sample of size 500 the mean is found to be 20. In another independent sample of size 400 the mean is 15. Could the sample have been drawn from the same population with S.D 4?

4) From the following data test the significance of the difference between the means of two normal population with same S.D

	size	mean	S.D
Sample 1	100	64	6
Sample 2	200	67	8

5) A certain injection administered to each of the 12 patients resulted in the following increases of blood pressures
5,2,8,-1,3,0,6,-2,1,5,0,4
Can it be concluded that the injections will be in genral accompanied by an increase in B.P.

6) In nutritional study 13 children given a usual diet plus vitamins A & D tablets while second comparable group of 12 children was taking the usual diet. After 12 months the gain in weight in found was noted as given in table. Can you say that vitamin A and D were responsible for these difference

A	5	3	4	3	2	6	3	2	3	6	7	5	3
D	1	3	2	4	2	1	3	4	3	2	2	3	3

7) The students of two school were measured for there height. One school was east coast and another is west coast .Check whether there is any impact of wheather on height taking other variable constant.

East Coast : 43, 45, 48, 49, 51,52

West Coast: 47, 49, 51, 53, 54, 55, 55, 56, 57

ASSIGNMENT NO. 8

1) 10 rats where feed with rice in first month and body weights were noted. In the next month they feed with grass and their weights measured again. The repective weights of 10 rats in 2 months are as follows

Weight in 1st month : 50, 60, 58, 52, 51

Weight in 2nd month : 56, 58, 68, 61, 56

2) The theory predicts the proportions of beans in 4 groups A,B,C and D should be 9:3:3:1. In an experiment among 1600 beans the numbers in 4 groups where 882, 313,287 & 118. Does the experiment result support the theory?

3) Records taken of the number of male and female births in 800 families having 4 children are given in following table

Number of birth :

Male: 0,1,2,3,4

Female: 4,3,2,1,0

Test whether the data are consistence with hypothesis that the binomial law holds & the chance of a male birth is equal to that of female birth.

4) In an experiment on the immunization of goats from athrax the following results where obtain. Derive your inference on the affectivity of the vaccine.

	Died of anthrax	survived
Inoculated with vaccine	2	10
Non-Inoculated with vaccine	6	6

5) Two samples are drawn from two normal populioans from following data test whether the two samples have the same variance of 5% of L.O.S?

Sample 1: 60,65,71,74,76,82,85,87

Sampl2 2: 61, 66, 67,85,78,88,86,85,63,91

6) A random sample of 50 items gives the mean 6.2 and standard deviation 10.24. Can it be regarded as drawn from a normal population with mean 5.4 at 5% level of significance?

7) A candidate at an election claims that , in a locality 90% voters support him. Verify his claim that if in a random sample of 400 voters from that locality 320 support him.

Assignment No.9

1. Let X denotes number of heads in an experiment of tossing of a coin and X~ B (10, 0.5). Calculate

   i. $P(X = 5)$

   ii. $P(X \leq 6)$

   iii. $P(X > 7)$.

2. Draw a random sample of size 10 from B (8, 0.4). Find mean and variance of the sample and print the result with proper headings.

3. Find value of x for which $P(X < x) = 0.82$ in B (10, 0.5).

4. Let $X \sim N(10, 4)$. Evaluate

   i. $P(X > 12)$

   ii. $P(X \leq 7)$

   iii. $P(5 < X < 12)$

   iv. Find k such that $P(X < k) = 0.4$

   v. Generate 100 observations, find its mean, median and variance.

5. The manufacturing of a rubber chemicals by a batch process, has a normal yield of 690lbs per batch. A new process is tried experimentally on 12 batches with the following yields: 620, 590, 660, 620, 700, 710, 690, 720, 700, 690, 720 and 650lbs. Are the yields of the new process a significantly different from that of the old process? (LOS = 0.01)

6. The height of six randomly chosen soldiers are in inches: 63, 65, 68, 69, 71 and

   72. Those of ten randomly chosen sailors are: 61, 62, 65, 66, 69, 69, 70, 71, 72,

   73. Is there evidence that soldiers are taller than sailors at 10% level of significance?

Assignment No.10

1. Life expectancy in 10 regions of India in 1960 and 12 regions in 1980 are given below:

Region	1	2	3	4	5	6	7	8	9	10	11	12
1960	37	39	36	42	45	44	46	49	50	41		
1980	44	45	47	43	42	49	50	41	48	52	42	49

Test whether the variances of these are same.

2. The following are two independent samples from two normal populations.

Obtain 95% confidence interval for the ratio of the population variances.

I: 25, 28, 26, 22, 22, 29, 31, 31, 26, 31

II: 30, 25, 31, 32, 23, 25, 36, 28, 31, 32, 32, 27, 31, 28, 24.

3. The following data gives the effect of a treatment that are as follows:

A	2	3	7	2	6
B	10	8	7	5	10
C	10	13	14	13	15

Test the hypothesis that all treatments are equally effective.

4. Suppose the National Transportation Safety Board (NTSB) wants to examine the safety of compact cars, midsize cars and full-size cars. It collects a sample of three for each of the treatments (car types). Using the hypothetical data provided below, test whether the mean pressure applied to the driver's head during a crash test is equal for each type of car. Use $\alpha = 5\%$.

Compact cars	Midsize cars	Full-size cars
643	469	484
655	427	456
702	525	402

Use $\alpha = 5\%$.

5. The time in minutes that a patient has to wait in a consulting room is recorded for 12 patients:

15,17,24,25,20,21,32,28,12,25,24,26

Use Wilcoxon sign rank test to check whether the median waiting

time is more than 20 minutes at 5% level of significance.

6. The weight of the persons before and after they stopped smoking are as follows:

	1	2	3	4	5
Before	65	75	75	62	72
After	72	82	72	66	73

Use Wilcoxon sign rank test to check whether the median weight of the persons increase after stopping smoking at 5% los.

Question Paper for Exam

Q.1) Attempt any TWO from the following: **10 Marks**

1. Find the median for the following data

Income in Rs.	15000-17000	17000-19000	19000-21000	21000-23000	23000-25000	25000-27000
No. of families	70	100	120	150	100	60

2. Find the arithmetic mean for the following data. Representing marks of 80 students.

Marks	0-10	10-20	20-30	30-40	40-50
No. of Students	12	13	21	19	15

3. A box contains 20 tickets numbered 1 to 20. A ticket is drawn at random from the box. Find the probability that the number on the ticket drawn is (i) divisible by 3   (ii) not divisible by 5

Q.2) Attempt any TWO from the following: **10 Marks**

1. The following data relate to the age of 10 employees and the number of days which they reported sick in a month:

Age	20	30	32	35	40	46	52	55	58	62
Sick days	11	12	10	13	14	16	15	17	18	19

Calculate the Karl Pearson's Coefficient of Correlation and interpret it.

2. An examination of eight applicants for a clerical post was taken by a firm. From the marks obtained by the applicants in the Accountancy and Statistics

papers, compute rank coefficient of correlation.

Applicants	A	B	C	D	E	F	G	H
Marks in Accountancy	15	20	28	12	40	60	20	80
Marks in Statistics	40	30	50	30	20	10	30	60

3. Find the regression equation of x on y and y on x.

x	1	2	3	4	5
y	2	5	3	8	7

Q.3) Attempt any TWO from the following: 10 Marks

1. Find the range and coefficient of range of the following data.
   (i) 63, 89, 98, 125, 79, 108, 117, 68
   (i) 43.5, 13.6, 18.9, 38.4, 61.4, 29.8

2. 2. The rainfall recorded in various places of five districts in a week are given below.

Rainfall (in mm)	45	50	55	60	65	70
Number of places	5	13	4	9	5	4

Find its standard deviation.

3. In a pack of 52 playing cards, two cards are drawn at random simultaneously. If the number of black cards drawn is a random variable, find the values of the random variable and number of points in its inverse images.

Q.4) Attempt any TWO from the following: 10 Marks

1. Can it be concluded that the average life span of an indian is more than 70 years, If a random sample of 100 Indians has a average life span of 71.8 years with S.D of 7.8 years?

2. From the following data test the significance of the difference between the means of two normal population with same S.D:

	Size	Mean	S.D
Sample 1	100	64	6
Sample 2	200	67	8

3. The theory predicts the proportions of beans in 4 groups A,B,C and D should be 9:3:3:1. In an experiment among 1600 beans the numbers in 4 groups where 882, 313,287 & 118. Does the experiment result support the theory?

Sonopant Dandekar Shikshan Mandali's

Sonopant Dandekar Arts, V. S. Apte Commerce & M. H. Mehta Science College, Palghar

[Best College - University of Mumbai]
(Amongst Top 100 Colleges in India by 'India Today - MDRA Survey 2019')

DEPARTMENT OF MATHEMATICS
Certificate Course in Statistical Methods using R-Software2022-23
Exam Attendance Sheet

Date : 08|05|23

Sr. No.	Name of the Student	Class	Signature
1	Mistry Ayush Kirtikumar	FYB.Com	Ayush
2	Nawabali Kismatali	FYB.Com	Khuy
3	Sahane Payal Ganesh	FYB.Com	Parahane
4	Yadav Hariom Rajbahadur	FYB.Com	Hariom
5	Singh Ashwani Urmila	FYB.Com	Asingh
6	Yadav Vishal Ramjanam	FYB.Com	Key
7	Yadav Vikas Ramkishan	FYB.Com	Vikas
8	Yadav Amit Mohan	FYB.Com	Amit
9	Shirole Rahul Balasaheb	F.Y.BCom	Rahul S.
10	Govind Vidyashri Vinayak	F.Y.BSc	Govind
11	Jadhav Jyoti Kashinath	F.Y.BSc	Jdabus
12	Tiwari Sangya Surya	S.Y.BSc	Sivar
13	Tejani Zeba Ashraf	F.Y.BSc	Zeba jani
14	Shaikh Shafin Akhlaque	S.Y.BSc	S.
15	Salkar Kiran Sadya	S.Y.BSc	Salker
16	Gangoda Pramod Jatrya	S.Y.BSc	pramod
17	Ghatal Vaibhav Ramal	S.Y.BSc	Ghatal

18	Gavali Rutik Ramesh	S.Y.BSc	
19	Khan Husna Moihuddin	F.Y.BSc	
20	Khan Sadika Atikullah	F.Y.BSc	Sadika
21	Pachalkar Sonali Vasudev	S.Y.BSc	
22	Singh Sunil Vishnu	F.Y.BSc(C.S)	
23	Yadav Vishal Rajesh	F.Y.BSc(C.S)	
24	Shaha Nisha Loknath	F.Y.BCom	
25	Sahu Savita Santosh	F.Y.BCom	
26	Desle Harshita Ravindra	F.Y.BCom	
27	Luckyraj Niraj Singh	F.Y.BSc	
28	Yadav Priyanshu	F.Y.BSc	
29	Varma Nitish Mundrika	F.Y.BSc	
30	Yadav. Pankaj Binda	F.Y.BSc.	Pankaj
31	Singh Abhishek Randhir	F.Y.BSc	
32	Suthar Dipak Devilal	S.Y.BSc	

Mrs. Dipali Mali

(Course coordinator,

Head, Mathematics Dept.)

Faculty Compliance Report

	Asst. Prof. Dipali Mali			
Sr. No.	**Topics Covered**	**Date**	**Time**	**Session Hours**
1	Sampling - Introduction, Z test	2/24/2023	1.00-2.00PM	1
2	Sampling - Z test	2/24/2023	2.00-3.00PM	1
3	Sampling - t test	2/28/2023	10.00-11.00AM	1
4	Sampling - t test	2/28/2023	11.00-12.00PM	1
5	Sampling -Chi test of association	3/1/2023	10.00-11.00AM	1
6	Sampling -Chi test of association	3/1/2023	11.00-12.00PM	1
7	Sampling - F test	3/2/2023	10.00-11.00AM	1
8	Sampling - F test	3/2/2023	11.00-12.00PM	1
9	ANOVA one way and two way classification	3/3/2023	10.00-11.00AM	1
10	ANOVA one way and two way classification	3/3/2023	11.00-12.00PM	1
	Total No. Of Lectures : 10			

	Asst. Prof. Husnawaz Contractor			
Sr. No.	**Topics Covered**	**Date**	**Time**	**Session Hours**
1	Introduction of Certificate Course	1/21/2023	1.00-2.00PM	1
2	Introduction to Correlation Analysis	1/28/2023	1.00-2.00PM	1
3	Karl Pearson's Co-efficient Correlation		2.00-3.00PM	1
4	Spearman's Rank Correlation Coefficient	2/3/2023	1.00-2.00PM	1
5	Introduction to Regression Analysis		2.00-3.00PM	1
6	Regression equation of x on y and y on x	2/4/2023	1.00-2.00PM	1
7	Regression Coefficient		2.00-3.00PM	1
	Total No. Of Lectures :			7

Asst. Prof. Ishrat Gawandi

Sr. No.	Topics Covered	Date	Time	Session Hours
1	Correlation Analysis	3/6/2023	10:00am - 12:00pm	2
2	Regression Analysis	3/8/2023	10:00am - 12:00pm	2
3	t test	4/28/2023	10:00am - 11:00am	1
4	F test	4/28/2023	11:00am - 12:00pm	1
5	ANOVA test	5/3/2023	10:00am - 11:00am	1
6	Wilcoxon Singed Ranked test	5/3/2023	11:00am - 12:00pm	1
7	Kruskal Wallis test	5/4/2023	10:00am - 11:00am	1
8	Chi - Square test of association	5/4/2023	11:00am - 12:00pm	1
	Total No. Of Lectures : 10			

Asst. Prof. Shirin Memon

Sr. No.	Topics Covered	Date	Time	Session Hours
1	Measures of Dispersion	1/27/2023	2.00-3.00PM	1
2	Binomial Distribution	2/16/2023	2.00-3.00PM	1
3	Binomial Distribution	2/17/2023	1.00-2.00PM	1
4	Poison Distribution	2/17/2023	2.00-3.00PM	1
5	Normal Distribution	2/23/2023	1.00-2.00PM	1
6	Normal Distribution	2/23/2023	2.00-3.00PM	1
	Total No. Of Lectures : 6			

Asst. Prof. Nidhi Rajesh Mali

Sr. No.	Topics Covered	Date	Time	Session Hours
1	Frequency Distribution	1/21/2023	02.00 pm- 03.00 pm	1
2	Measures of Central Tendency	1/27/2023	01.00 pm- 02.00 pm	1
3	Random variable and its Probability Distribution	2/10/2023	01.00 pm- 02.00 pm	1
4	Concept of random Experiment/trail and possible Outcomes	2/10/2023	02.00 pm- 03.00 pm	1
5	Sample Spaces & Probability Distribution of a discrete random Variable	2/11/2023	01.00 pm- 02.00 pm	1
6	Expectations & Variance of Random Variable	2/11/2023	02.00 pm- 03.00 pm	1
7	Random variable and its Probability Distribution	2/16/2023	01.00 pm- 02.00 pm	1
	Total No. Of Lectures : 7			

Certificate

Sonopant Dandekar Shikshan Mandali's
Sonopant Dandekar Arts, V.S. Apte Commerce
and M.H. Mehta Science College, Palghar
(Affiliated to University of Mumbai)
Amongst top 150 colleges as per India Today Nation wise survey
Awarded Best College by University of Mumbai

CERTIFICATE
OF COMPLETION

CENTER FOR EXCELLENCE & INNOVATION
DEPARTMENT OF MATHEMATICS

"Certificate Course in Statistical Methods Using R Software"

This is to acknowledge that

Mr/Ms. _Yadav Hariom Rajbahadur_

of _F·Y·B·Com_ class of Sonopant Dandekar College

has successfully completed **"Certificate Course in Statistical Methods Using R Software"**

conducted by Department of Mathematics during the academic year 2022-23

and secured _A_ grade.

Prof. Dipali Mali
HOD, Dept. of Mathematics

Prof. Mahesh Deshmukh
IQAC Co-ordinator

Dr. Kiran Save
Principal

Report

        The certificate course in Statistical Methods using R-Software is designed to equip students with the necessary skills in R programming and statistical analysis, preparing them for practical applications in various industries and academic fields. 31 students successfully completed this certificate course. Over 30 theoretical lectures and 10 practical sessions, they learned basic statistical concepts, various sampling methods, data analysis using R software, and computational skills for statistical inference. Additionally, they gained knowledge on applying statistics to fields such as science, commerce, business, and economics using R, and developed the ability to solve real-life problems using the software. After successfully completing the certificate course, students received a certificate of achievement.

Duration: 40 Hours (30 theory lectures and 10 practical lectures)
Format: Lectures, discussions, case studies, test.
Date of commencement: 15th February, 2023
Date of completion: 08th May, 2023
No. of Students Enrolled: 32

(Mrs. Dipali Mali)
HOD, Dept. of Mathematics
Sonopant Dandekar College,
Palghar