



Ministry of Education  
Government of India



**Department of Statistics  
and  
Internal Quality Assurance Cell (IQAC)**

**Mata Sundri College for Women  
(University of Delhi)**

is organizing

**One Week**

**Online Faculty Development Programme**

On

**“Exploratory Data Analysis using Statistical Software R and SPSS”**

**(7<sup>th</sup>–13<sup>th</sup> January, 2021)**

**3:00 p.m. – 6:00 p.m.**

in

collaboration with

**Mahatma Hansraj Faculty Development Centre**

(A Centre of Ministry of Education, Govt. of India under PMMMNMTT Scheme)

**Hansraj College**

(NAAC A+ CGPA 3.62, NIRF Rank #9)

University of Delhi

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[www.mhrfdc.in](http://www.mhrfdc.in)

## ABOUT HANSRAJ COLLEGE



Hansraj college is one of the largest constituent colleges of University of Delhi and has been ranked as one of the top five colleges for science, arts and commerce several times in the last decade. The faculty and students of the college have contributed immensely in the field of academics, sports and cultural activities. The college faculty is dedicated towards growth and development of the institution academically and administratively to constantly thrive for excellence. Hansarians have been placed in diverse professions and services worldwide and are bringing fame and laurels to the institution.

## ABOUT MATA SUNDRI COLLEGE FOR WOMEN



Mata Sundri College For Women, a well recognized college of University of Delhi, was founded in the year 1967 by the Gurudwara Prabhandak Committee, Delhi state. It is named after Mata Sundri Ji, the consort of the Tenth Guru of the Sikhs, Guru Gobind Singh Ji.

It was established to propagate the cherished ideals of service, leadership and academic pursuits among young women with the motto "Truth is the highest of all virtues but true living is higher still".

Mata Sundri College for Women is an institution where we strive to achieve excellence not only in higher education but also women empowerment. The student strength of the college is of more than four thousand vibrant young women. With its extremely well qualified teaching faculty and an efficient support staff backing them, the college provides an ideal learning environment for young women as they embark on their journey of life, giving shape to their most cherished dreams and wings to their creative pursuits. The college provide education in Humanities, Commerce as well as Mathematical Sciences. It is one of the eight colleges of University of Delhi which offer the B.El.Ed course that is an integrated professional degree programme. With a view to encouraging skill based education, many skill development programmes like Basic and Advanced Courses in Computers, Travel & Tourism, Textile Designing, Foreign Languages etc are also offered. It is a matter of pride that this institution is a study centre of Non-Collegiate Women's Education Board, University of Delhi and Indira Gandhi National Open University. The college mission is to provide quality education to students that not only nurtures individual talents but also fosters a spirit of camaraderie and teamwork.

## **ABOUT PMMMNMTT**

The Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching emphasizes the need to change the role and working of a teacher from mere disseminator of information and knowledge to the one who advances frontiers of existing knowledge by actively developing and creating new insights into diverse social and physical phenomena.

## **OBJECTIVES OF THE PROGRAMME**

The use of technology boosts every aspects of human life and every second it generates huge amount of data. However, raw data is just like crude oil. It's valuable, but if unrefined it cannot really be used. It has to be changed into gas, plastic, chemicals, etc., to create a valuable entity that drives profitable activity. So data must be broken down and analyzed for it to have value. With the rise of software, analyzing the data has become easy and quick and this has increased its utilization immensely. However, choice of appropriate statistical techniques and correct interpretation of results are indispensable for drawing valid inferences from the data. Exploratory Data Analysis (EDA), which is performed before a formal analysis, plays a critical role in data analysis process by maximizing the insights of a dataset and minimizing potential error later in the analysis. It is the process of performing initial investigations on data so as to uncover underlying structure and patterns in the data, identify important variables, identify anomalies, test a hypothesis, check assumptions, set the stage for model development and further statistical analysis.

This course on Exploratory Data Analysis using Statistical Software R and SPSS aims to introduce the participants with different aspects of exploratory analysis techniques essential for getting an insight of the data and subsequently implementing an appropriate statistical analysis. It will provide a platform to the participants to deal with various types of data, getting meaningful insights, data visualization, extracting important features and perform the analysis using software R and SPSS. This course will cover different statistical methods and graphics systems essential for exploratory analysis including descriptive statistics, probability distributions, hypothesis testing, statistical modeling, and multivariate techniques to visualize high-dimensional data etc.

In the recent past, R software, which is an open source statistical software used to visualize, manipulate and analyze the data, has received considerable popularity among the different domains of statistical science. It is the most widely used language in the world of data science. Being simple, well-developed and effective programming language, R provides very flexible language, effective data handling and storage facility, extensive and integrated collection of tools and graphical facilities for data analysis and display. Due to its robust features and effective data handling facility major organizations and universities use R for data analysis. SPSS on the other hand is a commonly used software popular for data analysis for many years. It is designed in such a way that it can handle a large set of variable data formats as well as help in processing critical data analysis in simple steps.



This course will provide a detailed acquaintance on data exploration and analysis using R and SPSS software. The basic structure of this course is practical oriented with emphasis on hands on using real data. Highly experienced faculty members and scientists from different universities and institutions will deliver lecture in each and every session of the course. This course is designed with an aim to provide interactive platform to get an insight of the data analysis process, understanding the knowhow of analyzing data through R and SPSS and interpretation of results for making data driven decisions. The program will provide vibrant opportunity for researchers and faculty members of all streams.

## **Topics to be covered**

- Overview of basic statistical methods and graphics
- Probability distribution and Hypothesis testing
- Statistical modeling (linear/non-linear) and model diagnostics
- Multivariate techniques
- Introduction to R
- Downloading and Installing R
- Import/export data in R
- Descriptive statistics in R
- Statistical tests (parametric/non-parametric) in R
- Graphics (including high dimensional plots) in R
- Probability distribution fitting in R
- Statistical modeling (linear/non-linear) in R
- Multivariate techniques in R
- Writing functions in R
- Simulations in R
- Introduction to SPSS
- Descriptive statistics using SPSS
- Statistical tests (Parametric/Non-Parametric) using SPSS
- Graphics using SPSS
- Statistical modeling (linear/logistics) using SPSS
- Multivariate techniques using SPSS

## REGISTRATION DETAILS

Interested participants are requested to follow the steps mentioned below in order to register for the FDP:

- Participants are required to pay the registration fee of **Rs. 500** via NEFT/ IMPS/ UPI to the following account:

**Account:** Principal, Hansraj College, FDC  
**Bank:** Canara Bank, Hansraj College, Delhi  
**Type of Account:** Savings  
**Account number:** 2848101019873  
**IFSC:** CNRB0002848

- Pre-registration to the programme is through **online** mode only.
- Limited seats are available for this programme on a first-come, first-served basis.

\* **NOTE: Fee is Non-Refundable**

Participants are required to fill the registration form using the following link. (Please ensure that you have payment proof before filling up registration form)

- Registration link: <https://bit.ly/381d5II>
- The **last date** for registration is **December 31, 2020**.
- **Participants** will be informed by **January 04, 2021**.
- Attendance norms are strict. Participants are required to clear the assessment component for getting the e-certificates.
- Further details will be communicated to the selected participants.
- **ELIGIBILITY:** The programme is interdisciplinary and is open to all the interested participants. All faculty members (regular/ ad-hoc/ temporary/ guest) and Research Scholars from any university/college are eligible to participate.

## ORGANIZING TEAM

### MHRFDC TEAM

**Prof. (Dr.) Rama**  
Principal, Hansraj College  
&  
Chairperson, MHRFDC

**Dr. Jyoti Bhola**  
Coordinator, MHRFDC

**Mr. Ashutosh Yadav**  
Dy. Coordinator, MHRFDC

### MATA SUNDRI COLLEGE TEAM

**Chief Patron**  
**Prof. (Dr. ) Harpreet Kaur**  
(Principal)

#### Coordinator

- **Ms. Prabhsharan Kaur**  
(Teacher in-charge, Deptt. of Statistics)

#### Co-Coordinator

- **Dr. Lokesh Kumar Gupta**  
(Coordinator, IQAC)

#### Convenor

- **Dr. Archana Verma**  
(Department of Statistics)

#### Co-Convenor

- **Dr. Swati Kujal**  
(Department of Statistics)