UNIVERSITY OF DELHI

DEPARTMENT OF STATISTICS

FACULTY OF MATHEMATICAL SCIENCES

BULLETIN OF INFORMATION

For admission to

M.A. /M.Sc. Statistics

2015-2016

For any querry regarding admission, contact at 011-27666041

About the Department

The Department of Mathematical Statistics was established in August 1973, though the teaching of M.A. in Mathematical Statistics had been introduced as early as in July 1957 at the initiative of Professor Ram Behari as part of a development programme adopted by the Department of Mathematics. Professor H.C. Gupta was the first head of the Department and he can be credited with the setting up of a good school in Stochastic Processes. In 1987, the Department of Mathematical Statistics was re-named as the Department of Statistics. The Department is running the post-graduate (M.A./M.Sc.), M.Phil. and Ph.D. Programmes in Statistics. In 1971, the scope of post-graduate course in Mathematical Statistics was extended leading to M.Sc. degree in Mathematical Statistics.

The syllabus of M.A./ M.Sc. course has been revised and restructured periodically to incorporate and reflect the latest in the discipline. The Department imparts rigorous training and exposure to the students in computer education by way of introducing the latest state-of-the-art in the programming language and computer software to enable the students to perform statistical data analysis. With a view to preparing research background of the students, the M. Phil. course in Mathematical Statistics was introduced in 1977 and the same has been continually updated covering most of the topical areas of Theoretical and Applied Statistics at the specialization level.

The Department has laboratories equipped with the basic and modern computing facilities. There is a good collection of books in laboratories with latest titles in various areas of statistics. Two computer laboratories with latest computing systems and related equipment have been setup in the Department for the use of students, research scholars and teachers. Regarding the job opportunities for the alumni, the Department has its own placement cell operating since academic year 2005-06. We can take pride in the fact that students get suitable placement in Research Institutes or Industries or Government Departments. Quite a few are selected in Indian Statistical Service (ISS) each year.

TEACHING STAFF IN THE FACULTY

Prof. Jagdish Saran	Room No.01, Ground Floor &	
Dean, Faculty of Mathematical Sciences	Room No. 313, Third Floor	27666041
& Head, Department of Statistics	New Academic Block	27666671
	University of Delhi	27666810

DEPARTMENT OF STATISTICS
UNIVERSITY OF DELHI
DELHI-110007

Sl. No.	Name	Designation	Tel. No.
1.	Prof. Jagdish Saran	Professor & Head	27666671/304 27666671/313
2.	Dr. (Mrs.) Gurprit Grover	Associate Professor	27666671/306
3.	Dr. Ajit Chaturvedi	Associate Professor	27666671/307
4.	Dr. (Mrs.) Poonam Singh	Associate Professor	27666671/308
5.	Dr. (Mrs.) Ranjita Pandey	Assistant Professor	27666671/310
6.	Mr. Ashok Kumar	Assistant Professor (Adhoc)	27666671/305
7.	Dr Kapil Kumar	Assistant Professor (Adhoc)	27666671/305
8.	Mr. Abhishek Kumar Umrawal	Assistant Professor (Adhoc)	27666671/311
9.	Ms. Garima Priyadarshini	Assistant Professor (Adhoc)	27666671/311

COURSE OF STUDY IN STATISTICS

Sl. No.	Course	No. of seats
1.	M.A./M.Sc. Statistics	93 (North & South Delhi Campus) Gen- 47, SC -14, ST-07, OBC -25 *Supernumerary Seats: PWD=03, Sports/ECA =05, CW=05, Foreign Students=05

*as per the University of Delhi rules.

DURATION OF THE COURSE
Two Years (4-Semesters)

IMPORTANT DATES

Tuesday, June 09, 2015	:	Date of Entrance Examination Timings – 10:00 a.m. to 1:00 p.m.
Tuesday, June 23, 2015 (Tentative)	:	Date of declaration of result of Entrance Test
Wednesday, July 01, 2015 (Tentative)	:	Date of Admission List (Subject to declaration of B.Sc. (Hons.) Statistics result.)

ADMISSION PROCEDURE AND ELIGIBLITY CONDITIONS FOR ADMISSION TO M.A./M.Sc. COURSE IN STATISTICS 2015-2016

Admission to Post-Graduate Course in Statistics leading to a Master's Degree in Statistics will be made through two modes:

Mode-I : Direct Admission

Mode-II : Through an Entrance Test

Examination Passed & Minimum Percentage of marks required

Mode-I: 50% seats in the M.A./M.Sc. Statistics shall be filled on the basis of a merit list drawn from the category of candidates who have passed B.Sc. (Hons.) Examination in Statistics of University of Delhi under

10+2+3 scheme of examination with at least 60% marks in aggregate.

(Candidates appearing in the final year Examination are eligible to apply subject to submission of their mark sheet tentatively by 26th June 2015.)

Mode-II: The remaining 50% seats will be filled on the basis of merit in an entrance examination from the candidates satisfying any of the following eligibility criteria:

1. Any candidate who has obtained bachelor's degree in any subject and has studied at least 3 courses each of one year duration or 6 courses each of one semester duration in Statistics under 10+2+3 scheme of examination securing at least 50% marks in aggregate will be eligible to appear in entrance examination.

2. Any candidate who has obtained bachelor's degree in Mathematics (Hons.) or Computer Science (Hons.) with at least one paper in Statistics under 10+2+3 scheme of examination of the University of Delhi or any other examination recognized as equivalent thereto with at least 50% marks in aggregate and at least 60% marks in a paper of Statistics.

Any candidate appearing in the final year examination of bachelor's degree of the same calendar year shall also be eligible to appear in the entrance test, however, he/she will be considered for admission if he/she fulfills the other requirements of admission.

Note: If a candidate qualifies for admission through both Modes, he/she will be granted admission through Mode-I.

Number of Seats Available : 93

General Category	Mode-I	24
	Mode-II	23
SC Category	Mode-I	07
	Mode-II	07
ST Category	Mode-I	03
	Mode-II	04
OBC Category	Mode-I	13
	Mode-II	12
	Total:	**93**

*Supernumerary Seats

PWD	Mode-I	02
	Mode-II	01
Sports/ECA	Mode-I	upto 03 (upto 5%)
	Mode-II	upto 02 (upto 5%)
CW	Mode-I	03
	Mode-II	02

Foreign Nationals* = 05

*As per the University of Delhi rules.

Modalities:

1. The candidates belonging to reserved categories will be provided relaxations/ reservations as per University rules in both the Modes of admission. It may be noted that candidates can apply simultaneously under GEN/SC/ST/OBC/PwD/Sports/ECA/CW categories.

2. Under mode-I the minimum requirement for candidates belonging to SC/ST categories will be 40% marks in aggregate and for OBC category will be 54% marks in aggregate in B.Sc.(Hons.) examination in Statistics of University of Delhi.

3. Under Mode-II the minimum requirement for candidates belonging to SC/ST categories will be 40% marks in aggregate in the qualifying examination and for OBC category will be 45% marks in aggregate in the qualifying examination.

4. The entrance examination shall be of three hours duration. The question paper shall be of 400 marks consisting of 100 MCQs (multiple choice questions).

5. Each MCQ carries 4 marks. For each correct response the candidate will get 4 marks. For each incorrect response shown in the answer-sheet, **one mark will be deducted.** No mark will, however, be deducted for not attempting a question. More than one response indicated against a question in the answer-sheet will be considered as incorrect response and will be negatively marked.

Note: Applicants who have graduated under 10+2+3 scheme or any Equivalent Scheme are eligible for admission.

Syllabus for the Entrance Test

Linear Algebra: Elements of set theory. Vector space, subspace and its properties. Linear independence and dependence of vectors. Matrices, rank of a matrix, reduction to normal forms, linear homogeneous and non-homogeneous equations. Cayley-Hamilton theorem, characteristic roots and vectors. De Moivre's theorem, relation between roots and coefficient of n^{th} degree equation. Solution to cubic and biquadratic equation.

Calculus: Limit and continuity, differentiability of functions, successive differentiation. Leibnitz's theorem, partial differentiation. Euler's theorem on homogeneous functions. Tangents and normals, asymptotes, singular points, curve tracing, reduction formulae. Integration and properties of definite integrals, quadrature. Rectification of curves. Volumes and surfaces of solids of revolution.

Differential Equations: Linear, homogeneous, separable equations. First order higher degree equations, algebraic properties of solutions. Linear homogeneous equations with constant coefficients. Solution of second order differential equations.

Probability and Sampling Distributions: Notions of sample space and probability. Theorems on probability. Combinatorial probability. Conditional probability and independence. Bayes theorem and its applications. Random variables and expectations. Moments and moment generating functions. Cumulants and Cumulant generating functions. Characteristic function. Standard univariate discrete and continuous distributions. Bivariate probability distributions. Marginal and Conditional distributions. Independence of variates. Bivariate normal and multivariate normal distributions. Transformation in univariate and bivariate distributions. Chebychev's inequality. Weak law of large numbers. Strong law of large numbers. Central limit theorem. Sampling distribution of a statistic, standard errors of sample mean and sample proportion. Sampling distribution of sample mean and sample variance for normal distribution. Sampling distributions of Chi-square, t- and F- statistics.

Descriptive Statistics: Measures of location and dispersion. Measures of skewness and kurtosis. Absolute moments and factorial moments. Inequalities concerning moments. Theory of attributes, consistency of data, conditions for consistency, independence and association of attributes, measures of association and contingency. Correlation and regression. Karl Pearson's coefficient of correlation. Lines of regression. Rank correlation. Intraclass correlation. Multiple and partial correlations. Simple linear regression.

Statistical Inference: Elementary theory of estimation (consistency, unbiasedness, minimum variance, sufficiency). Minimum variance unbiased estimators. Cramer-Rao inequality. Methods of estimation (maximum likelihood method, method of moments). Rao-Blackwell and Lehmann-Scheffe theorems. Interval estimation (confidence intervals for the parameters of normal distribution, confidence intervals for difference of means and for ratio of variances). Tests of hypotheses (basic concepts, MP test and region, simple applications of Neyman-Pearson lemma, likelihood ratio test, UMP test, UMPU test). Non-parametric tests (sign-test, Wald-Wolfowitz run test, run test for randomness, median test, Wilcoxon-Mann-Whitney test).

Sample Surveys and Design of Experiments: Sampling and non-sampling errors. Conventional sampling techniques (SRSWR/SRSWOR, stratified random sampling, systematic sampling). Ratio and regression methods of estimation.

ANOVA and ANOCOVA. Basic designs such as CRD, RBD, LSD and their analyses. Missing plot technique. $2^n \left(n \leq 5\right)$ Factorial experiments and their construction and analysis. Total and partial confounding.

LIST OF COLLEGES, AT A GLANCE, OFFERING STATISTICS POST-GRADUATE COURSE IN THE FACULTY

For M.A./M.Sc. Course in Statistics

	North Delhi Campus	**Telephone No.**
1.	Hindu College	27667184
2.	Ramjas College	27667706,27667447
	South Delhi Campus	
1.	Lady Shri Ram College (for women)	26434459, 26460400
2.	Sri Venkateswara College	24672196

DEVELOPMENT FEE

With the University Cashier at the time of issuing admission slip

Additional Resource General Fund (ARGF) (Statistics Deptt.) (A/c No. SB10851300636) **(Non-refundable)** Rs. 1500/-

All the eligible students to be admitted to NDC/SDC will be required to deposit the requisite fee to the concerned college direct.

Note :

(1) The information given in this bulletin shall automatically be changed in case if University authorities decided on such items otherwise or from time to time.

(2) Disputes if any, arising out of or relating to any matter whatsoever, concerning the process of admission shall be subject to the exclusive jurisdiction of the competent court in Delhi only.

(3) The OBC status is to be determined on the basis of the Central List of OBCs notified by the Ministry of Social Justice Empowerment (http:/ncbc.nic.in/backward classes/index.htm).

(4) The registration is valid for the current academic year only.

(5) As per A.C. Resolution 40 dated 24/4/1997, no student of the University shall be permitted to pursue two degree courses simultaneously either from the University of Delhi or from other University except the part-time diplomas/certificates of the University of Delhi.

IMPORTANT INSTRUCTIONS

Candidates who will be issued provisional admission slips will be required to complete the admission formalities including payment of necessary fees, etc. in a College allotted within three days of the issue of admission slips. The admission slips will be retained by Colleges and the counterfoils returned to the Faculty office, duly signed and rubber stamped by the Principals of respective Colleges after a student has been duly admitted there. The names of those candidates who fail to complete the admission formalities or fail to surrender the admission slip in any College within the stipulated period shall be removed from the admission list without any further reference to them and seats thus vacated will be offered to other candidates in order of merit.