I – Academic Planner

A. Teaching Plan (Year : 2020 Semester: Odd)

Teacher's Name: Dr. Alka Sabharwal Department: STATISTICS

S. No.	UPC	Paper Name	Core/AECC/GE/SEC	Topic/Unit	Start Date	End Date
1	32371501	Stochastic Processes and Queuing Theory	Core	Probability Distributions: Generating functions, Bivariate probability generating functions, Stochastic Process: Introduction, Stationary Process. (Theory and Practical)	11/08/2020	07/09/2020
				Markov Chains: Definition of Markov Chain with examples, transition probability matrix, order of Markov chain, Markov chain as graphs.(Theory and Practical)	08/09/2020	22/09/2020
				Higher transition probabilities. Generalization of independent Bernoulli trials, classification of states and chains, Stability of Markov system. (Theory and Practical)	23/09/2020	8/10/2020
				Gambler's Ruin Problem: Classical ruin problem, expected duration of the game. (Theory and Practical)	12/10/2020	14/10/2020
				Poisson Process: postulates of Poisson process, properties of Poisson process, inter-arrival time, Pure birth process, Yule Furry process, birth and death process, pure death process (Theory and Practical)	15/10/2020	27/10/2020
				Queuing System: General concept, steady state distribution, queuingmodel, M/M/1 with finite and infinite system capacity, waiting timesdistribution (without proof). (Theory and Practical)	28/10/2020	08/11/2020
				Difficulties and Project Presentations	09/11/2020	19/11/2020
2	32371109	Calculus	Core	Limits of function, continuous functions. Properties of continuous functions.	18/11/2020	Week 2
				Partial differentiation and total differentiation. Indeterminate forms: L Hospital's rule.	Week 3	Week 5
				Leibnitz rule for successive differentiation. Euler's theorem on homogeneous functions.	Week 6	Week 8
				Maxima and minima of functions of one and two variables, constrained optimization techniques (with Lagrange multiplier) along with some problems.	Week 9	Week 11
				Jacobian, concavity and convexity, points of inflexion of function, singular points. Theory of Asymptotes (Only for Cartesian forms).	Week 12	Week 14

				Assignments and difficulties	Week 15	09/03/2021

B. FDP/Seminar/Workshops/Lectures to be attended and/or to be conducted by Teachers

Event Topic		Google classroom			
Type / Nature (FDP/Webinar/Workshop etc.)		Webinar			
Organizing In-charge		**Kirori Mal College**			
Details regarding invited Resource Person		**Google Team**			
Nature of Participation (e.g. Invited Speaker, Participant etc.)		**Participant**			
Date/s	**08/08/2020**	**Timing/s**	**10:30 to 1:30**	**Mode**	**Online/ Hand - on**
Event Topic		Conducting online classes series & Microsoft Teams session			
Type / Nature (FDP/Webinar/Workshop etc.)		Webinar			
Organizing In-charge		Kirori Mal College			
Details regarding invited Resource Person		Microsoft Teams			
Nature of Participation (e.g. Invited Speaker, Participant etc.)		Participant			
Date/s	**21/08/2020, 04/09/2020 & 12/09/2020, 1/10/2020, 4/12/2020**	**Timing/s**	3:00 pm – 4:00pm, 3:00 pm – 4:00pm, 11 am- 12:30 pm respectively	**Mode**	Online

C. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
568	B.Sc (Hons) Statistics	32371501	Probability Generating Functions and covariance Stationarity	22/10/2020 and 29/10/2020 (group wise)	5/11/2020 Discussing the marks, Returning
568	B.Sc (Hons) Statistics	32371501	Markov Chain and Higher transition probabity.	22/10/2020 and 29/10/2020(group wise)	5/11/2020 Discussing the marks, Returning

568	B.Sc (Hons) Statistics	32371501	Project Presentation (group wise)	5/11/2020	19/11/2020
568	B.Sc (Hons) Statistics	32371109	Course up to Leibnitz rule for successive differentiation. Euler's theorem on homogeneous functions**. (Assignments)**	First Week of January	Last Week of January
568	B.Sc (Hons) Statistics	32371109	**Total Course (Presentation)**	02/03/2021	09/03/2021

***Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**

I – Academic Planner

B. Teaching Plan (Year : 2020-21 Semester: EVEN)

Teacher's Name: Dr. Alka Sabharwal Department: STATISTICS

S. No.	UPC	Paper Name	Core/AECC/GE/SEC/DSE	Topic/Unit	Start Date	End Date
1	32373902	Statistical Data Analysis Using R	SEC	Introduction to R, Installation of packages and modules, loading of data, playing with arithmetic expressions. Introduction to data types viz. data frame, matrix, list and other inbuilt functions along with usage. (Theory and Practical)	5/01/2021 Week-1	Week-4
				Commands and practical based on Graphical representation and interpretation viz. bar-plot, pie-chart, and box plot, stem-leaf, histograms (equal class intervals and unequal class intervals), frequency polygon, ogives with graphical summaries of data.	Week-5	Week-7
				Generate automated reports giving detailed descriptive statistics. Practical work. Import data, code editing, Scatter plot; correlation and lines of regression. Curvilinear regression. Practical work.	Week-8	Week-9
				User defined functions, Introduction to flow control: if(), for() and while() loop. Practical work. Random number generation from different probability distribution and their p.d.f, c.d.f and area related problems	Week -10	Week-11
				Application problems based on fitting of suitable distribution. Practical work.	Week-12	Week 12
				Sampling procedures. Q-Q plot, Multiple Regression. Practical work. Basics of statistical inference in order to understand hypothesis testing, compute p-values and confidence intervals. Practical work.	Week-13	Week -13
				Simple analysis and create and manage statistical analysis projects. And presentations	Week-14	Week-15
				Doubts and presentation and Mock test	Week-15	End of the Session
2	32371602		Core	Sign test: one sample, two sample, large samples.Wilcoxon-Mann-Whitney U – test. Kruskal - Wallis test.,Wald- Wolfowitz test.	14/01/2021 Week-1	Week-3

		Multivariate Analysis and Non-Parametric Methods		Median Test. Test for randomness based on total number of runs. Kolmogorov Smirnov test for one sample.		
				SPRT Procedure and Graphical representation of decision lines, acceptance and rejection regions.	Week-4	Week-5
				ASN function and ASN curve.OC function and OC curve.	Week-6	Week-6
				Partial Correlation Coefficient. Multiple Correlation Coefficient. Plane of Regression.	Week-7	Week-9
				Principal Component Analysis. Discriminant analysis. Factor Analysis.	Week-10	Week-12
				Practical based on real data topic wise	Week-13	Week-14
				Mock Practical Examination (s) and difficulties	Week-15	End of the session
2	32377911	Financial Statistics	**DSE**	To compute NPV and to obtain IRR of the investments. "no arbitrage" principle. To price future / forward contracts	13/01/2021 Week-1	Week-3
				To construct binomial trees and to evaluate options using these trees.	Week-4	Week-6
				Simulation of continuous time stochastic processes. To price options using Black – Scholes formula.	Week-7	Week-9
				Pricing of options using discrete time models. Impact of dividend on option prices.	Week-9	Week-11
				Call-put parity for options. 10. Application of Greeks to hedge investment portfolios.	Week-12	Week-13
				Practical based on real data topic wise	Week-14	Week-14
				Mock Practical Examination (s) and difficulties	Week-15	End of the session

D. Internal Assessment: House Exam (Test/Presentation etc.) & Assignment*

Course Code	Course Name	Unique Paper Code	Topic Name	Day and Date	Date/s of Exhibiting the Assessment Sheet to students, Discussing the marks, Returning/Retaining
568	B.sc {Hons) Statistics	3237302	Up to application of sampling distribution(Test)	With in first week after Mid sem break	After two weeks
568	B.sc {Hons) Statistics	3237302	Project allotted and presentation	First Week of march	As and student is ready for presentation (last two weeks of the session) Discussion is done immediately after the presentation

***Marks of the Internal Assessment to be submitted to the College 15 days before the last working day of every semester**