

## I – Academic Planner

### A. Teaching Plan (Year : 2021 Semester: Odd)

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

S. No.	UPC	Paper Name	Core/AE CC/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)	21/07/2021	17/08/2021
				Markov Chains: Definition of Markov Chain with examples, transition probability matrix, order of Markov chain, Markov chain as graphs.(Theory and Practical)	18/08/2021	02/09/2021
				Higher transition probabilities. Generalization of independent Bernoulli trials, classification of states and chains, Stability of Markov system. (Theory and Practical)	03/09/2021	14/09/2021
				Gambler's Ruin Problem: Classical ruin problem, expected duration of the game. (Theory and Practical)	16/09/2021	28/09/2021
				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)	29/09/2021 19/10/2021	08/10/2021 28/10/2021
				Queuing System: General concept, steady state distribution, queuing model, M/M/1 with finite and infinite system capacity, waiting time distribution (without proof). (Theory and Practical)	29/10/2021	11/11/2021
2	32371101		Descriptive Statistics	Core	Practical Presentation of data in: Discrete & Continuous frequency table;b) Cumulative frequency table; Graphical representation of data-Frequency curve, frequency polygon and histogram; Ogives;. Measures of Central tendency; Based on Arithmetic mean: Formulae (Direct Method);Change of Origin and Scale; Based on Median and partition values:Formulae (Direct Method)- Graphically,c) Based on Mode	06/12/2021

				Practical Measures of Dispersion - Quartile deviation using formula and graphically-Mean Deviation;c) Standard deviation and variance: Formulae (direct method); Change of origin & Scale;. Coefficient of dispersion and variation.	04/01/2022	17/01/2022
				Practical Combined mean and combined variance; Raw moments; Moments about any arbitrary point; Central Moments; Moments using relation between Raw moments, Moments about any arbitrary point and Central Moments.	18/01/2022	01/02/2022
				Practical Correct moments involving wrong data; Skewness based on mean, median, mode and standard deviation;Skewness and kurtosis based on moments; Problem based on missing frequencies	07/02/2022	14/02/2022
				Practical Theory of attributesa;Representation of word problems in the form of class frequencies;Based on Fundamental set of class frequencies;c) Association and independence of attributes.	21/02/2022	28/02/2022

### B. 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	17/08/2021	07/09/2021 Discussing the marks, Returning
568	B.Sc (Hons) Statistics	32371501	Markov Chain and Higher transition probability.	02/09/2021	5/10/2021 Discussing the marks, Returning
568	B.Sc (Hons) Statistics	32371501	Project Presentation (group wise)	08/10/2021	29/11/2021

**\*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 : 2021-22 Semester: EVEN)

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

S. No.	UPC	Paper Name	Core/AE CC/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)	04/01/2022 Week-1	Week-3
				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-4	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	17/04/2022
				Doubts and presentation and Mock test	18/04/2022	24/04/2022
2	32377910				Survival Analysis: To study various survival functions and interrelationship between them. Introduction to various survival models.	03/01/2022 Week-1

		Survival Analysis and Bio-Statistics	Censoring Schemes: Definition of censoring. Study of Type I, Type II and progressive or random censoring with biological examples.	Week-4	Week-5
			Competing Risk Theory: Introduction of various measures of competing risk theory. Estimation of probabilities of death using maximum likelihood principle and modified minimum Chi-square methods. Theory of independent and dependent risks:	Week-6	Week-6
			Stochastic Epidemic Models: Definition of epidemic, susceptibles and infective. Simple and general epidemic model. Duration of an epidemic.	Week-7	Week-9
			Statistical Genetics: Introduction, concepts-Genotype, Phenotype, Dominance, Recessiveness, Linkage and Recombination, Coupling and Repulsion. Mendelian laws of Heredity, Random mating, Gametic array, relation between genotypic array and gametic array under random mating. Segregation matrix. Estimating probabilities of gametes for future generations.	Week-10	Week-12
			Bivariate normal dependent risk model. Non parametric Methods: Actuarial and Kaplan-Meier methods for estimating survival function and variance of the Estimator	Week-13	05/04/2022
			Clinical trials: Phases of clinical drug trial. Blinding.	11/04/2022	18/04/2022

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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	32373902	Based on first two units	26/02/2022	10/03/2022
568	B.sc {Hons } Statistics	32373902	Based on last two units	12/04/2022	18/04/2022
568	B.sc {Hons } Statistics	32373902	Project allotted and presentation	10/03/2022	20/04/2022
568	B.sc {Hons } Statistics	32377910	Based on first three Units	08/04/2022	17/04/2022
568	B.sc {Hons } Statistics	32377910	Project allotted and presentation	08/03/2022	15/04/2022

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