Teaching Plan for Odd Semester, UG course

Department of Statistics

Session 2018-19

Class: B.A/ B.Sc
Semester 1,3,Part-II & Part-III(1+1+1) system
Name of the Teacher: Mr. Arup Kumar Hait
Subject: Statistics
Paper : STSACOR01, Part-II Paper-IV, Section –I , Part-III, Paper-V & Part-III,Paper-VI (Theory and Practical)

S. No	Practical syllabus to be covered (Paper code to be mentioned)	Theory syllabus to be covered (Paper code to be mentioned)
Week 1 to week 4	**STSACOR01P** • Graphical representation of data. • Stem and Leaf Display • Problems based on measures of central tendency. **Part-III, Paper-V** • Simple linear regression. • Multiple regression. • Multiple Correlation • Partial Correlation	**STSACOR01T** Definition and scope of Statistics, concepts of statistical population and sample. Data: quantitative and qualitative, attributes, variables, scales of measurement: nominal, ordinal, interval and ratio. Presentation: tabular and graphical, including histogram and ogives, column diagram and step diagrams. Stem and Leaf display. Measures of Central Tendency: mathematical and positional. **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** Introduction : Examples of time series from various fields. Components of time series . Additive and Multiplicative models. Trend and Seasonal Components . **Part-III, Paper-V** Multivariate data – its graphical representation, multiple correlation and partial correlation and their properties, multiple regression and related results. , Partial Correlation. **Part-III,Paper-VI** Design of Experiments : Principles of Experimental Design :Randomization, Replication and Local Control, Uniformity trials, Shapes and Sizes of Plots and Blocks
Week 5 to week 8	**STSACOR01P** • Problems based on measures of dispersion. • Problems based on combined mean and variance and coefficient of variation. • Problems based on moments **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis**	**STSACOR01T** Measures of Dispersion: range, quartile deviation, mean deviation, standard deviation, coefficient of variation. Moments, absolute moments, factorial moments, Sheppard's corrections (without proof). **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis**

	• Determination of trend by curve fitting • Determination of trend by moving averages	Estimation of trend by linear filtering (simple weighted moving averages) and curve fitting (polynomial, exponential and Gompertz). **Part-III, Paper-V** Regression with binary data: Logistic regression and fitting by least square method. **Part-III,Paper-VI** Standard Designs and their Analyses : Completely Randomised Design (CRD), Randomised Block Design (RBD), Latin Square Design (LSD),
Week 9 to Week 12	**STSACOR01P** • Problems based on moments, skewness and kurtosis. • Box Plot • Karl Pearson correlation coefficient. • Correlation coefficient for a bivariate frequency distribution. • Lines of regression, angle between lines and estimated values of variables. **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** • Determination of seasonal indices by method of averages Design of Experiments **Part-III,Paper-VI** • Analysis of CRD • Analysis of an RBD • Analysis of an LSD	**STSACOR01T** Measures of skewness and kurtosis. Box Plot. Definition, scatter diagram, simple correlation, linear regression and principle of least squares **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** Variate Difference method. Detrending. Estimation of seasonal component by ratio to moving –average method, ratio to trend method. Deseasonalization. **Part-III, Paper-V** Random Vector : Probability mass and density functions, Distribution Function, Mean Vector and Dispersion matrix, Marginal and Conditional Distributions, Multiple Regression, Multiple Correlation **Part-III, Paper-VI** Split Plot Design, comparison of efficiencies. Applications of the techniques of Analysis of variance to the analysis of the designs.
Week13 to week 14	**Class Tests and Internal Exam**	
Week 15 to 17	**STSACOR01P** • Fitting of polynomials, exponential curves. • Spearman rank correlation with and without ties. • Computation of correlation ratio.	**STSACOR01T** Fitting of polynomials and exponential curves, Spearman rank correlation, correlation ratio, intra-class correlation. **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis**

| | Computation of intra class correlation coefficient. | Stationary Time Series : Weak stationarity. Autocorrelation. Function and Correlogram. Test for Randomness (Kendall' s τ). |
| | **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis**
 • Harmonic Analysis
 • Correlogram Analysis
 Part-III,Paper-VI

 • Analysis of 2^2 and 2^3 factorial in CRD and RBD
 • Analysis of 2^2 and 2^3 factorial in LSD | **Part-III,Paper-VI**
 Factorial Experiments : 2^n (2^3 and 2^2 only) experiments, Advantages, |

Class: B.Sc. (Honours)
Semesters: 1 (CBCS), Part II & III (1+1+1 System)
Name of the Teacher: Kiranmoy Chatterjee
Subject: Statistics
Paper : STSACOR01T, STSACOR02T (CBCS), Paper III, IV

S. No	Practical syllabus to be covered (Paper code to be mentioned)	Theory syllabus to be covered (Paper code to be mentioned)
Week 1 to week 4	Practical exercises related to Paper III: Probability Theory II (2nd Year, 1+1+1 System)	Paper STSACOR02T(CBCS) : Vector spaces, subspaces, sum of subspaces, Span. Linear dependence and independence, basis and dimension, dimension theorem. Paper III: Probability Theory II (2nd Year, 1+1+1 System): Defnition of continuous random variable, Univariate Continuous Distributions : Rectangular, Normal, Cauchy, Gamma, Beta, Exponential, Laplace, Logistic, Pareto, Log-normal distributions and their properties, Concept of truncated distribution and censoring----Truncated Exponential. Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System): Introduction : Concepts of Quality and Quality Control, Process Control and Product Control, Process Control : Control Charts And their uses, Choice of Subgroup sizes
Week 5 to week 8	Practical exercises related to Paper III: Probability Theory II (2nd Year, 1+1+1 System) Practical exercises related to Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System)	Paper STSACOR02T(CBCS) : Orthogonal vectors, Gram-Schmidt orthogonalization, ortho-complement space. Null space and nullity. A review, theorems related to triangular, symmetric and skew symmetric matrices, idempotent matrices, orthogonal matrices, singular and non-singular matrices and their properties. Trace of a matrix.

	Practical exercises related to Paper VI: ANOVA (3rd Year, 1+1+1 System)	Paper III: Probability Theory II (2nd Year, 1+1+1 System): The c.d.f., p.m.f. and p.d.f. in bivariate case. Marginal and Conditional distributions. Independence. Conditional Expectation and Variance, Correlation and Regression. Bivariate Normal Distribution and its properties Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System): Construction of x , R, p and c charts with variable sample sizes, Interpretation of non-random pattern of points, Modified Control Charts. Product Control : Producer's Risk, Consumer's Risk, Paper VI: ANOVA (3rd Year, 1+1+1 System): Introduction: Heterogeneity and Analysis of Variance and Covariance, Linear Hypothesis, Orthogonal splitting of total variance, Selection of Valid Error.
Week 9 to Week 12	Practical exercises related to Paper III: Probability Theory II (2nd Year, 1+1+1 System) Practical exercises related to Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System) Practical exercises related to Paper VI: ANOVA (3rd Year, 1+1+1 System)	Paper STSACOR02T (CBCS) : Row space and column space of a matrix. Definition, properties and applications of determinants for 3rd and higher orders, evaluation of determinants of order 3 and more using transformations. Symmetric and Skew symmetric determinants, Circulant determinants and Vandermonde determinants for nth order. Paper III: Probability Theory II (2nd Year, 1+1+1 System): Probability Inequalities : Chebyshev's Lemma, Markov's & Chebyshev's inequalities, Trimmed mean. Limit Theorems: Convergence in Probability, Weak Law of Large Numbers and its Applications, Convergence in Distribution. Normal approximation to the Poisson Distribution, Statement of Central limits Theorem (i.i.d. Case) & its application. Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System): Acceptance Sampling Plan, Single and Double sampling plans by attributes, OC, ASN (and ATI), LTPD and AOQL, Single sampling plan for inspection by variables (one-sided specification, known σ cases), Use of IS plans and tables. Paper VI: ANOVA (3rd Year, 1+1+1 System): One-way ANOVA Model, Applications of the ANOVA technique to one-way classified data.

Week 13-14:	**Internal Exam (for CBCS) and Class Tests (for Part II & III in 1+1+1 system)**	
Week 15 to 17	Practical exercises related to Paper III: Probability Theory II (2nd Year, 1+1+1 System) Practical exercises related to Paper IV: Statistical Quality Control (2nd Year, 1+1+1 System)	Paper STSACOR02T : Jacobi's Theorem. Product of determinants. Adjoint and inverse of a matrix and related properties. Use of determinants in solution to the system of linear equations. Paper III: Probability Theory II (2nd Year, 1+1+1 System): Use of continuous distributions in scaling and the Pareto and Log- normal distributions as income or allied distributions, Concept of Truncation and censoring ---Truncated exponential

Class: B.Sc
Semester 1 (CBCS), Part II & III (1+1+1 System)
Name of the Teacher: Suryasish Chatterjee
Subject: Statistics
Paper : STSACOR02T, STSACOR06T, STSACOR06P, STSADSE02T, STSADSE02P

S. No	Practical syllabus to be covered (Paper code to be mentioned)	Theory syllabus to be covered (Paper code to be mentioned)
Week 1 to week 4	Practical exercises related to Paper III: Mathematical Methods II (2nd Year, 1+1+1 System)	**Paper STSACOR02T:** Sequence of real numbers and their convergence, limits of sequences, Cauchy's general principle of convergence, Cauchy's first theorem on limits, monotonic sequences, limit superior and limit inferior of a bounded sequence Paper III: Mathematical Methods II (2nd Year, 1+1+1 System): Polynomial approximation of a function, Numerical Integration :Trapezoidal and Simpson's 1/3 rules. Numerical solution of equations :method of fixed point iteration and Newton –Raphson method in one unknown. Paper V: Large Sample Theory (2nd Year, 1+1+1 System): Convergence in Distribution, Normal approximation to the Poisson distribution,Statement of Central limit Theorem (i.i.d. case) &its application, Relation among different modes of convergence-----slutsky's theorem

Week 5 to week 8	Practical exercises related to Paper III: Mathematical Methods II (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Large Sample Theory (3rd Year, 1+1+1 System)	**Paper STSACOR02T**: Infinite series, positive-termed series and their convergence. Comparison tests, D'Alembert's ratio test and Cauchy's n_{th} root test, (Statements and examples only). Absolute convergence of series, Leibnitz's test for the convergence of alternating series, Conditional convergence. Paper III: Mathematical Methods II (2nd Year, 1+1+1 System): Conditions of convergence, Stirling's approximation to factorial. (statement only) Function of several variables. Maxima and Minima : Maxima and minima for functions of several variables, Paper V: Large Sample Theory (2nd Year, 1+1+1 System): Derivation of large sample standard error of sample moments, standard deviation, coefficient of variation, b_1 and b_2 measures and correlation coefficient and their uses in large sample tests.
Week 9 to Week 12	Practical exercises related to Paper III: Mathematical Methods II (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Large Sample Theory (3rd Year, 1+1+1 System)	**Paper STSACOR02T**: Statement of the fundamental theorem of algebra and its consequences. Relation between roots and coefficients of any polynomial equations. Solutions of cubic and biquadratic equations when some conditions on roots of equations are given Paper III: Mathematical Methods II (2nd Year, 1+1+1 System): Constrained maximization and minimization –use of Lagrange multiplier. Integrals : multiple integrals, Transformation variables and Jacobian, Polar and Orthogonal transformations. Paper V: Large Sample Theory (2nd Year, 1+1+1 System): Transformations of Statistics to stabilize variance : derivation and use of $\sin^{-1}$, square root, logarithmic and z-transformations. Large sample tests for binomial proportions, Poisson means (single and two independent sample cases) and correlation coefficients.

Week 13 to week 14		Class Tests & Internal Exam
Week 15 to 17	Practical exercises related to Paper III: Sampling Distribution (2nd Year, 1+1+1 System) Practical exercises related to Paper III: Statistical Inference I (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Large Sample Theory (3rd Year, 1+1+1 System)	Paper III: Sampling Distribution (2nd Year, 1+1+1 System): Introduction : Concepts of Random Sampling. Statistic and Sampling distributions of Statistics. Illustrations using different distributions, reproductive properties of the distributions.Some standard Sampling Distributions : χ_2 distribution Paper III: Statistical Inference I (2nd Year, 1+1+1 System): Elements of Estimation : Concepts of Point and Interval Estimation; Requirements of a good estimator - notions of Mean Square Error, Unbisedness, Minimum Variance, Methods of Estimation – method of moments and Least – square method, maximum likelihood method, Confidence Intervals. Paper V: Large Sample Theory (3RD Year, 1+1+1 System): Large sample distribution of Pearsonian χ_2–statistic and its uses, Goodness of fit. Yate's correction in a 2x2 contingency table.

Class:B.Sc
Semester 2 and Part II   **Name of the Teacher: Soumyadeep Das**
Subject: Statistics
Paper : STSACOR04T, Part II Paper III and IV(Theory and Practical)

S. No	Practical syllabus to be covered (Paper code to be mentioned)	Theory syllabus to be covered (Paper code to be mentioned)
Week 1 to week 4	**Paper III of Part II:** Practical problems related to Correlation and Regression	**Paper III of Part II**: Correlation and Regression **Paper IV of Part II**: Concepts of Quality and Quality Control, Process Control and Product Control **Paper STSACORO4T**: Reimann Integration of Real valued Functions.
Week 5 to week 8	**Paper IV of Part II**: Construction of different types of Control Charts like x, R, p and c charts with variable sample sizes.	**Paper IV of Part II**: Control Charts and their uses, Choice of Subgroup sizes, Construction of x, R, p and c charts with variable sample sizes **Paper STSACORO4T**: Convergence of Integrals, Simple tests. Multiple Integration.

Week 9 to Week 12	**Paper IV of Part II:** Construction of Modified Control Charts.	**Paper IV of Part II**: Interpretation of non-random pattern of points, Modified Control Charts. **Paper STSACORO4T:** Pointwise & Uniform convergence
Week 13	**Paper IV of Part II:** Practical problems on Product Control : Producer's Risk, Consumer's Risk, Acceptance Sampling Plan, Single and Double sampling plans by attributes, OC, ASN and ATI , LTPD and AOQL.	**Paper IV of Part II:** Product Control : Producer's Risk, Consumer's Risk, Acceptance Sampling Plan, Single and Double sampling plans by attributes, OC, ASN and ATI , LTPD and AOQL **Paper STSACORO4T:** Simple tests, Properties of Uniformly convergent functions
Week13 to week 14		**Internal Exam**
Week 15 to 17	**Paper IV of Part II:** Practical on Single sampling plan for inspection by variables (one-sided specification, known σ cases).	**Paper IV of Part II:** Single sampling plan for inspection by variables (one-sided specification, known σ cases), Use of IS plans and tables **Paper STSACORO4T:** Power series.

BIDHANNAGAR COLLEGE, GOVERNMENT OF WEST BENGAL, SALTLAKE, KOLKATA

Teaching Plan for even Semester(CBCS),Part-II &Part-III(1+1+1) UGcourse

Department of Statistics

Session (2018-19)

Class: B.A/ B.Sc
Semester 2,4 & Part-II & Part-III(1+1+1)
Name of the Teacher: Arup Kumar Hait
Subject: STATISTICS
Paper : STSACOR04, Part-II Paper-IV, Section –I , Part-III, Paper-V & Part-III,Paper-VI (Theory and Practical)

S. No	Practical works to be covered (Paper code to be mentioned)	Theory topics to be covered (Paper code to be mentioned)
Week 1 to week 4	**Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** **Part-III, Paper-V** • Multinomial Distribution **Part-III,Paper-VI**	**STSACOR04T** Row reduction and echelon forms. Partitioning of matrices and simple properties. Rank of a matrix,row-rank, column-rank, standard theorems on ranks, rank of the sum and the product of two matrices. **Part-II Paper-IV, Section –I** **Group-A: Time Series Analysis**

	• Analysis of a completely confounded two level factorial design in 2 blocks • Analysis of a completely confounded two level factorial design in 4 blocks • Analysis of a partially confounded two level factorial design	Some special processes : Moving –average (MA) process and Autoregressive (AR) process of orders one and two. **Part-III, Paper-V** Multivariate Distributions : Multinomial distributions and their properties. **Part-III,Paper-VI** Total and Partial Confounding, Analysis.
Week 5 to week 8	**Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** • Fitting of AR 1 and AR 2 models	**STSACOR04T** Matrix equations Ax=b, solution sets of linear equations. Applications of linear equations, inverse of a matrix. **Part-II Paper-IV, Section –I** **Group-A: Time Series Analysis** Estimation of parameters of AR(1) and AR(2) –YuleWalker equations.
Week 9 to Week 12	**Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** • Simple Exponential Smoothing **Part-III, Paper-V** • Bivariate Normal Distribution, • Multivariate Normal Distribution **Part-III,Paper-VI** • ANCOVA	**STSACOR04T** Characteristic roots and Characteristic vector, Properties of characteristic roots, Cayley Hamilton theorem, Quadratic forms: Classification and canonical reduction. Linear transformations. **Part-II Paper-IV, Section –I** **Group-A: time Series Analysis** Forcasting : Exponential smoothing. **Part-III, Paper-V** Multivariate Distributions : Multivariate Normal distributions and their properties. **Part-III,Paper-VI** Analysis of Covariance (ANCOVA) : Application of the ANCOVA technique to oneway classified data to two- way classified data with number of observations per cell, use in control of error in CRD, RBD .
Week13 to week 14		**Tests and Internal Exam**
Week 15 to 17	**Part-III,Paper-VI** • Analysis of an RBD with one missing observation • Analysis of an LSD with one missing observation	**STSACOR04T** Applications of Linear Algebra in Statistics. **Part-III,Paper-VI** Missing Plot Technique : Analysis with one missing plot in a RBD

Class: B.Sc. (Honours)
Semesters: 2 (CBCS), Part II & III **(1+1+1 System)**
Name of the Teacher: Kiranmoy Chatterjee
Subject: Statistics
Paper : STSACOR03T, STSACOR04T (CBCS), Paper IV (Part II) and Paper VI (Part III)

S. No	Practical works to be covered (Paper code to be mentioned)	Theory topics to be covered (Paper code to be mentioned)
Week 1 to week 4	Practical exercises related to Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System) Practical exercises related to Paper VI: ANOVA (3rd Year, 1+1+1 System)	Paper STSACOR03T(CBCS): Introduction, random experiments, sample space, events and algebra of events. Sigma algebra of events. Definitions of Probability – classical, statistical and axiomatic. Paper STSACOR04T(CBCS) : Row reduction and echelon forms. Partitioning of matrices and simple properties. Rank of a matrix, row-rank, column-rank, standard theorems on ranks, rank of the sum and the product of two matrices. Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System): Introduction: Concepts of Quality and Quality Control, Process Control and Product Control. Process Control : Control Charts And their uses, Choice of Subgroup sizes Paper VI: ANOVA (3rd Year, 1+1+1 System): Two-way classified data with one and some equal no. of observations per cell separately. Applications of the ANOVA technique to two-way classified data.
Week 5 to week 8	Paper STSACOR03P(CBCS): 1. Numerical sums using classical definition of Probability. 2. Numerical sums on conditional probability. Practical exercises related to Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System)	Paper STSACOR03T(CBCS): Theorem of compound probability, theorem of total probability, Conditional probability and independence of event. Bayes theorem and its applications. Paper STSACOR04T(CBCS) : Matrix equations Ax=b, solution sets of linear equations. Applications of linear equations, inverse of a matrix. Characteristic roots and Characteristic vector.

	Practical exercises related to Paper VI: ANOVA (3rd Year, 1+1+1 System)	Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System): Construction of *X-bar* , R, p and c charts with variable sample sizes, Interpretation of non-random pattern of points, Modified Control Charts. Paper VI: ANOVA (3rd Year, 1+1+1 System): Testing simple regression coefficients, and linearity of simple regression, correlation ratio.
Week 9 to Week 12	Paper STSACOR03P(CBCS): 3. Fitting of binomial distribution for given n and p. 4. Fitting of binomial distribution after computing mean and variance. 5. Fitting of Poisson distribution for given value of lambda. 6. Fitting of Poisson distribution after computing mean. 7. Fitting of negative binomial. 8. Fitting of suitable distribution. 9. Application problem based on binomial distribution 10. Application problem based on Poisson distribution. 11. Application problem based on negative binomial distribution. Practical exercises related to Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System) Practical exercises related to Paper VI: ANOVA (3rd Year, 1+1+1 System)	Paper STSACOR03T(CBCS): Discrete random variables, p.m.f. and c.d.f., statement of properties of c.d.f,: binomial, Poisson, geometric, negative binomial, hypergeometric, uniform. Paper STSACOR04T(CBCS) : Properties of characteristic roots, Cayley Hamilton theorem, Quadratic forms: Classification and canonical reduction. Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System): Product Control: Producer's Risk, Consumer's Risk, Acceptance Sampling Plan, Single and Double sampling plans by attributes, OC, ASN (and ATI), LTPD and AOQL, Paper VI: ANOVA (3rd Year, 1+1+1 System): multiple correlation and partial correlation coefficients.

Week 13-14:   Internal Exam (for CBCS) and Mid-Term Tests (for Part II & III in 1+1+1 system)

Week 15 to 17	Practical exercises related to Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System)	Paper STSACOR03T(CBCS): p.d.f. and c.d.f., illustrations and properties, univariate transformations with illustrations. Derivation of moments. Probability Inequalities: Markov and Chebyshev. Paper STSACOR04T(CBCS) : Linear transformations. Applications of Linear Algebra in Statistics. Revision of all the topics. Paper IV: Statistical Quality Control(2nd Year, 1+1+1 System): Single sampling plan for inspecting by variables (one-sided specification, known σ cases), Use of IS plans and tables.

Class:B.Sc
Semester 2, 4 and 6   **Name of the Teacher: Suryasish Chatterjee**
Subject: Statistics
Paper : STSACOR04T, STSACOR08T,STSACOR08P, STSACOR14T, STSACOR14P,
STSSSEC02M

S. No	Practical syllabus to be covered (Paper code to be mentioned)	Theory syllabus to be covered (Paper code to be mentioned)
Week 1 to week 4	Practical exercises related to Paper III: Sampling Distribution (2nd Year, 1+1+1 System) Practical exercises related to Paper III: Statistical Inference I (2nd Year, 1+1+1 System)	**Paper STSACOR04T**: Limit, Continuity, Differentiability, Uniform Continuity and Boundedness of functions, Indeterminate forms, L'Hospital's rule. Rolle's and Lagrange's mean value theorems. Paper III: Sampling Distribution (2nd Year, 1+1+1 System): distributions of the mean and variance of a random sample from a normal population, t and F distributions, distributions of means, variances and correlation coefficient (null case) of a random sample from a bivariate normal population, Paper III: Statistical Inference I (2nd Year, 1+1+1 System): Elements of Hypothesis Testing : Null and Alternative hypotheses, Simple and Composite hypotheses, Critical Region, Type I and Type II Errors, Level of Significance and Size, p-value, Power. Paper V: Statistical Inference II (3rd Year, 1+1+1 System): Point Estimation : Sufficiency, Completeness, Factorization Theorem, Exponential, Family of distributions, Properties of minimum variance unbiased estimators, consistent estimators and asymptotic efficiency , Cramer –Rao lower bound .Rao-Blackwell Theorem. Lehmann- Scheffe Theorem. Maximum Likilihood Minimum χ_2 estimators and their properties (excluding proofs of large sample properties).
Week 5 to week 8	Practical exercises related to Paper III: Sampling Distribution (2nd Year, 1+1+1 System) Practical exercises related to Paper III: Statistical Inference I (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Statistical Inference II (3rd Year, 1+1+1 System)	**Paper STSACOR04T**: Taylor's theorem and Lagrange's and Cauchy's form of remainder (without proof). Taylor's and Maclaurin's series expansion. Reimann Integration of Real valued Functions. Convergence of Integrals, Simple tests. Multiple Integration. Paper III: Sampling Distribution (2nd Year, 1+1+1 System): Distribution of simple regression coefficient (for both stochastic and non-stochastic independent variable cases). Distribution of order statistics and Sample Range.

		Paper III: Statistical Inference I (2nd Year, 1+1+1 System): Applications : Estimation, Tests of Significance and associated Confidence Intervals related to a single Binomial proportion and Poisson parameter Paper V: Statistical Inference II (3rd Year, 1+1+1 System): Theory of Hypothesis Testing : Most Powerful(MP), Uniformly Most Powerful (UMP) and Uniformly Most Powerful Unbiased (UMPU) tests, Randomized and nonrandomized Tests, Fundamental Neyman –Pearson Lemma (sufficiency part only), and its use in the construction of MP and UMP tests (single parameter with range independent of the parameter), Likelihood Ratio tests and its applications to tests for the equality of means and variances of several normal populations.
Week 9 to Week 12	Practical exercises related to Paper III: Statistical Inference I (2nd Year, 1+1+1 System) Practical exercises related to Paper III: Sampling Distribution (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Statistical Inference II (3rd Year, 1+1+1 System)	**Paper STSACOR04T:** Pointwise & Uniform convergence. Simple tests, Properties of Uniformly convergent functions. Power series. Paper III: Statistical Inference I (2nd Year, 1+1+1 System): Mean and variance of an univariate normal distribution, the difference of means and ratio of variances of two independent normal distributions. the difference of means, the ratio of variances, and the independence. Paper V: Statistical Inference II (3rd Year, 1+1+1 System): Interval Estimation :Confidence intervals Confidence sets, Concepts of Uniformly Most Accurate (UMA) and Uniformly Most Accurate Unbiased (UMAU) confidence sets, relationship with tests of hypotheses, confidence intervals with Shortest Expected Length
Week13 to week 14		**Internal Exam**
Week 15 to 17	Practical exercises related to Paper III: Statistical Inference I (2nd Year, 1+1+1 System) Practical exercises related to Paper V: Statistical Inference II (3rd Year, 1+1+1 System)	Paper V: Statistical Inference II (3rd Year, 1+1+1 System): Nonparametric Methods : Sign test, Median test, Wilcoxon Signed-Rank test, Run test, Mann-Whitney U test.