

Lesson Plan for Statistics Minor Semester : V

Paper : Design of Experiments I and Sample Survey I (Theory)			
Topic : Design of Experiments I	Allotted Time (In Hours)	Number of Classes	Teacher's Name
<p>Analysis of Variance</p> <ol style="list-style-type: none"> 1. Factors 2. Types and effects Fixed, random and mixed effects models 3. Analysis of one-way and two-way classified data with equal number of observations in each cell (Fixed Effects Models only) 	22	10	Anamitra Mandal & Susmita Chatterjee
<p>Experimental Designs</p> <ol style="list-style-type: none"> 1. Treatments 2. Experimental units & Blocks 3. Experimental error 4. Basic principles of Design of Experiments (Fisher) 		2	Anamitra Mandal & Susmita Chatterjee

Lesson Plan for Statistics Minor Semester : V

<p>Basic designs</p> <ol style="list-style-type: none">1. Completely Randomized Design (CRD)2. Randomized Block Design (RBD)3. Latin Square Design (LSD)4. Layout, model, Applications of the techniques of ANOVA to the analysis of the above designs5. Missing plot techniques in RBD and LSD6. Uniformity trial experiments and comparison of designs		10	Anamitra Mandal
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Lesson Plan for Statistics Minor Semester : V

Paper : Design of Experiments I and Sample Survey I (Theory)			
Topic : Sample Survey I	Allotted Time (In Hours)	Number of Classes	Teacher's Name
<p>Sampling Theory</p> <ol style="list-style-type: none"> 1. Concept of population and sample 2. Complete enumeration versus sampling 3. Sampling and non-sampling errors 4. Types of sampling 5. Non-probability and probability sampling 6. Basic principle of sample survey 	23	5	Anamitra Mandal & Debamalya Kar
<p>Simple Random Sampling</p> <ol style="list-style-type: none"> 1. Simple random sampling with replacement 2. Simple random sampling without replacement 3. Random numbers 4. Procedure of selecting a sample 5. Estimates of population mean 6. Estimates of population total 7. Estimates of population proportion 8. Standard errors of these estimates 9. Estimates of their standard errors 		10	Anamitra Mandal & Debamalya Kar

Lesson Plan for Statistics Minor Semester : V

<p>Stratified Random Sampling</p> <ol style="list-style-type: none">1. Technique,2. Estimates of population mean and total3. Variances of these estimates4. Allocations - proportional and optimum5. Comparison of Proportional and optimum allocations with simple random sampling		4	Anamitra Mandal & Debamalya Kar
<p>Two Stage Sampling</p> <ol style="list-style-type: none">1. Two-stage sampling (with primary units of equal size and equal selection probability at each stage)2. Unbiased estimation of population mean3. Unbiased estimation of population total4. Ideas of snowball sampling5. Purposive sampling		4	Anamitra Mandal & Debamalya Kar

Lesson Plan for Statistics Minor Semester : V

Paper : Statistical Inference I (Theory)

Topic : Design of Experiments I	Allotted Time (In Hours)	Number of Classes	Teacher's Name
<p>Basic concepts of Statistical Inference</p> <ol style="list-style-type: none"> 1. Population and sample 2. Parameter and statistic 3. Population distribution and sampling distribution Point estimation 4. Interval estimation 5. Testing of hypothesis 6. Three useful distributions for statistical Inference χ^2, t, F (derivations excluded). 	25	5	Anamitra Mandal & Susmita Chatterjee
<p>Point Estimation</p> <ol style="list-style-type: none"> 1. Concepts of estimation 2. Requirements of a good estimator 3. Notions of mean square error 4. Unbiasedness 5. Bias-variance trade off 6. minimum variance unbiasedness 7. Best linear unbiasedness 8. Properties of uniformly minimum variance unbiased estimators (UMVUE) 9. Comparison of Estimators 10. Efficiency 		10	Anamitra Mandal & Susmita Chatterjee

Lesson Plan for Statistics Minor Semester : V

<p>Method of Estimation</p> <ol style="list-style-type: none">1. Method of maximum likelihood estimation and statements of their small sample properties2. Point estimators of the parameters of Binomial, Poisson, and univariate Normal distributions.		5	Anamitra Mandal
<p>Interval Estimation</p> <ol style="list-style-type: none">1. Confidence Interval2. Confidence Coefficient3. Exact confidence interval for mean(s) and variance(s) for one and two sample problems under the Normal set-up		5	Anamitra Mandal

Lesson Plan for Statistics Minor Semester : V

Paper : Statistical Inference I (Theory)

Topic : Testing of Hypothesis	Allotted Time (In Hours)	Number of Classes	Teacher's Name
<p>Elements of Hypothesis Testing</p> <ol style="list-style-type: none"> 1. Null and alternative hypotheses 2. Simple & composite hypotheses 3. Critical region 4. Type I and type II errors 5. Level of significance 6. Size 7. Power, 8. P-value 	20	5	Anamitra Mandal & Debamalya Kar
<p>Exact Tests and Confidence Intervals</p> <ol style="list-style-type: none"> 1. Classical and p-value approaches 2. Tests relating to Binomial and Poisson distributions 3. Fisher's exact test 4. Chi-square tests for association 5. Homogeneity and goodness of fit 6. Tests of hypotheses for the parameters of normal distribution (one sample and two sample problems) 7. Paired t-test 8. Combination of probabilities in tests of significance 		15	Anamitra Mandal & Debamalya Kar