

## 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><b>Basic concepts of Statistical Inference</b></p> <ol style="list-style-type: none"> <li>1. Population and sample</li> <li>2. Parameter and statistic</li> <li>3. Population distribution and sampling distribution Point estimation</li> <li>4. Interval estimation</li> <li>5. Testing of hypothesis</li> <li>6. Three useful distributions for statistical Inference <math>\chi^2</math>, <math>t</math>, <math>F</math> (derivations excluded).</li> </ol>	25	5	Anamitra Mandal & Susmita Chatterjee
<p><b>Point Estimation</b></p> <ol style="list-style-type: none"> <li>1. Concepts of estimation</li> <li>2. Requirements of a good estimator</li> <li>3. Notions of mean square error</li> <li>4. Unbiasedness</li> <li>5. Bias-variance trade off</li> <li>6. minimum variance unbiasedness</li> <li>7. Best linear unbiasedness</li> <li>8. Properties of uniformly minimum variance unbiased estimators (UMVUE)</li> <li>9. Comparison of Estimators</li> <li>10. Efficiency</li> </ol>		10	Anamitra Mandal & Susmita Chatterjee

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<p><b>Method of Estimation</b></p> <ol style="list-style-type: none"><li>1. Method of maximum likelihood estimation and statements of their small sample properties</li><li>2. Point estimators of the parameters of Binomial, Poisson, and univariate Normal distributions.</li></ol>		5	Anamitra Mandal
<p><b>Interval Estimation</b></p> <ol style="list-style-type: none"><li>1. Confidence Interval</li><li>2. Confidence Coefficient</li><li>3. Exact confidence interval for mean(s) and variance(s) for one and two sample problems under the Normal set-up</li></ol>		5	Anamitra Mandal

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### Paper : Statistical Inference I ( Theory )

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