

IIT Mandi
Proposal for a New Course

Course Number : HS550P
Course Name : Statistical Methods Practical
Credits : 0-0-2-1
Prerequisites : This course should be taken along with HS550: Statistical Methods
Intended for : Postgraduate and B.Tech.
Distribution : HSS Course – Elective
Semester : Even/Odd

1. Preamble:

The course intends to provide a hands-on training to the students on practical applications of several statistical methods that are covered under the course HS550: Statistical Methods. The course will use statistical packages, which are available for teaching on campus.

2. Course Modules with Quantitative Hours:

Module 1: Representation of Data and Descriptive Statistics (2 hrs)

Representation of data; Central tendency, dispersion, skewness, and kurtosis; Quartile and percentile; Gini coefficient and Lorenz curve; Correlation.

Module 2: Random Sampling and Parametric Statistical Inference (6 hrs)

Drawing random samples from the population –simple random sampling (with and without replacement); Sampling distribution; Statistical estimation – parametric point estimation and interval estimation; Maximum Likelihood Estimator, Hypothesis testing and calculation of effect size.

Module 3: Non-parametric Statistical Inference (6 hrs)

Carrying out non-parametric tests, estimation of location and dispersion, tolerance interval; non-parametric measures and tests of association.

Module 4: Designs of Experiment (6 hrs)

Experimental design strategies; Blocking and Randomization; Factorial design of experiments.

Module 5: Regression Analysis and ANOVA (8 hrs)

Multiple regression analysis, interpretation of estimates, testing of significance; Analysis of Variance (ANOVA) – one way ANOVA and two way ANOVA.



3. **Textbooks:** Heiman, G. W. (2011). Basic Statistics for the Behavioral Sciences. Sixth Edition. Wadsworth.

4. **References:**

1. Field, A. (2013). Discovering Statistics Using IBM SPSS Statistics. Sage Publishing.
2. Field, A., Miles, J. and Field, Z. (2012). Discovering Statistics Using R. Sage Publishing.
3. STATA Manual: <https://www.stata.com/manuals13/u.pdf>

5. **Similarity Content Declaration with Existing Courses:** None. However, this is the lab course attached to HS550: Statistical Methods and therefore the topic covered are similar.

6. **Justification for new course proposal if cumulative similarity content is > 30%:**N/A

Approvals:

Proposed by: Shyamasree Dasgupta

School: SHSS

Other Faculty interested in teaching this course: Dr. Varun Dutt, Dr. Puran Singh

Signature: _____

Date: _____

Recommended/Not Recommended, with Comments:

Date: _____

Chairman, CPC

Approved/Not Approved

Date: _____

Chairman, Senate

