

# Stat-421 Experimental Design

100 Marks: 03 Credits

Number of Class: 35-40

**Basic Concept:** Definition and fundamentals of analysis of variance, analysis of variance in one way, two-way and three way classifications with unequal number of observations per cell, test for additivity.

**Basic Design:** Basic principles in experimental design, completely randomized design, randomized block design, latin square design, analysis with missing observation in randomized block design and latin square design, efficiency of designs.

**Factorial and Split Plot Design:** Factorial experiment up to  $p^n$  series, asymmetrical factorial experiments, confounding, partial confounding, total confounding, balanced confounding, fractional replications, multiple comparison test, split-plot design.

**Incomplete Block Design:** Balanced incomplete block and partially balanced incomplete block design with their construction.

**Covariance Analysis:** Covariance analysis with two concomitant variables.

## Text

1. Cochran, W.G. and Cox, G.M. (2000): *Experimental Design*, 2nd Edition, Wiley, New York.
2. Das, M. N. and N. C. Giri (1986): *Design and Analysis of Experiments*, 2<sup>nd</sup> Edition, Wiley Eastern, India.

## References

1. Fisher, R.A. (1995): *The Design of Experiments*, 8<sup>th</sup> edition, Hafner, New York.
2. Hitson, A. (1995): *The Analysis of Variance*, 3<sup>rd</sup> edition, Wiley, New York.
3. John and Quenouille (1977): *Experiments Design and Analysis*, 2nd Edition, Charles Griffin, London.
4. K.C.Peng, *Experimental Design*

5. Montgomery D. C. (2005): *Design and Analysis of Experiments*, 6<sup>th</sup> edition, Wiley, USA.
6. Scheffe, H. (1959): *Analysis of Variance*, Wiley, New York.