



Code	Subject Title	Cr. Hrs	Semester
STAT-310	Advanced Experimental Design (Theory)	3	VI
Year	Discipline		
3	Statistics-I,II,III		

Code	Subject Title	Cr. Hrs	Semester
STAT-311	Advanced Experimental Design (Lab)	1	VI
Year	Discipline		
3	Statistics-I,II,III		

### Course Outline

1. Factorial experiments and its advantages.  $2^k$  Factorial in Randomized Complete Block designs. 2nd series Factorial experiments. Linear and quadratic components of main effects and interactions. 3rd series Factorial experiments.
2. Confounding, its types and its advantages. Complete and partial confounding in 2nd series.
3. Fractional replication. Quasi-Latin squares.
4. Split-plot designs and Split-split plot designs.
5. Balanced incomplete and Partially Balanced incomplete block designs. Comparison of Incomplete Block design with Randomized Complete Block design. Youden Squares.

### Books Recommended

1. Cochran, W.C. and Cox, G.M. "Experimental Design", John Wiley and Sons, New York, Second Edition, 1957.
2. Montgomery, D.C. "The Design and Analysis of Experiments", John Wiley and Sons, New York, Fourth Edition, 1997.
3. John, J.A. and Quenoville, M.H. "Experiments Design and Analysis", Second Edition, Charles Griffin & Co. London, 1977.

### Reference Books

1. Kempthorne, O. & Hin Kelmann, K. "Design and Analysis of Experiments, Vol.1", John Wiley and Sons, New York, 1994.
2. Barker, T.B. "Quality by Exp. Design", Marcel Dekker, Inc. New York, Second Edition, 1994.
3. Boniface, D.R., "Experiment Design and Statistical Methods for Behavioural and Social Research", Chapman & Hall, London. First Edition, 1995.
4. Ostle, B. and Mensing, R.W. "Statistics in Research", The Iowa State University Press, Third Edition, 1975.
5. Winer, B.J. "Statistical Principles in Experimental Design". McGraw-Hill Book Company, New York, Second Edition, 1971.
6. Federer, W.T. "Experimental Design", Macmillan Company, New York, 1955.
7. Graybill, F.A. "An Introduction to Linear Statistical Models, Vol.1" McGraw Hill Book Company, New York, 1961.
8. Heath, D. "An Introduction to Experimental Design and Statistics for Biology", UCI Press, London, second edition, 1996.



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9. Clewer, AlanG, “Practical Statistics and Experimental Design for Plant and Crop Science”, Wiley N.Y., 2001.
  10. Quinn Gerry P, “Exp. Design and Data Analysis for Biologists” Camb. Press, Cambridge, 2002.
  11. JeffWu, C.F. “Experimental: Planning Analysis”, Wiley, New York, 2002.
  12. Kuehl, R.O. “Design of experiments: Statistical principles of research design and analysis” Duxbury, Boston, 2000.
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