

INDIAN INSTITUTE OF TECHNOLOGY KHARAGPUR

1. Name of the Academic Unit: Mathematics

2. Subject Name: Design of experiments
Credits:3

L-T-P: 3-0-0

1. Pre-requisites: Probability and Statistics, Statistical Inference

3. Syllabus and reference books:

Syllabus:

The Analysis of Variance, Randomized Block & Latin Square design, Factorial design (2^k , with block), Incomplete and Confounded Block Designs, Fractional Factorial Designs (with 3^k), Response Surface Methods and Designs, Experiments with Random Factors, Nested and Split-Plot Designs, Optimal design, Robust Parameter Design Experiments, Sequential design, Response adaptive design

Reference Books:

1. Montgomery, D. C. (2017). Design and analysis of experiments. John Wiley & sons.
2. Lawson, J. (2014). Design and Analysis of Experiments with R (Vol. 115). CRC press.
3. Dean, A., Voss, D., & Draguljić, D. (1999). Design and analysis of experiments (Vol. 1). New York: Springer.
4. Cox, D. R., & Reid, N. (2000). The theory of the design of experiments. CRC Press.
5. Bapat, R. B. (2012). Linear algebra and linear models. Springer Science & Business Media.
6. Atkinson, A., Donev, A., & Tobias, R. (2007). Optimum experimental designs, with SAS (Vol. 34). Oxford University Press.

4. Lecture-wise break-up:

Sl. No.	Topic	No. of lectures
1.	The Analysis of Variance, Randomized Block & Latin Square design, Factorial design (2^k , with block), Incomplete and Confounded Block Designs	13
2.	Fractional Factorial Designs (with 3^k) Response Surface Methods and Designs	13

	Experiments with Random Factors Nested and Split-Plot Designs	
3.	Optimal design, Robust Parameter Design Experiments Sequential design, Response adaptive design	10
Total number of hours		36