BIOSTATISTICS AND DESIGN OF EXPERIMENTS

PROF. MUKESH DOBLE
Department of Biotechnology
IIT Madras

TYPE OF COURSE : Rerun | Core/Elective | UG/PG
COURSE DURATION : 8 weeks (24 Jan' 22 - 18 Mar' 22)
EXAM DATE : 27 Mar 2022

PRE-REQUISITES : Basics of probability and statistics

INTENDED AUDIENCE : UG/PG Biotech programmes (core or elective) and research scientists in biotechnology, clinical trials, agriculture etc and allied fields students

INDUSTRIES APPLICABLE TO : Biopharma, Agriculture, fisheries and Biotechnology companies.

COURSE OUTLINE :
Biostatistics is the application of statistics to different topics in biology including medicine, pharmacy, public health science, agriculture and fishery. It involves the analysis of data from experiments; its interpretation and drawing conclusion from the results. It is very relevant to all UG and PG level degree programmes majoring in Biotechnology and allied fields as well as practicing scientists. It involves the application of statistical theory to real-world problems, the practice of designing and conducting biomedical experiments and clinical trials. Design of experiments is planning experimental strategy, screening a large number of parameters and selecting the important ones, determining the minimum number of experiments and deciding on the mode and manner in which experiment have to be conducted. The course encompasses topics such as distribution of data, sample size, tests of significance, data reduction, regression analysis, comparison of performance of drugs in clinical trials, design of experiments, screening and second order designs.

ABOUT INSTRUCTOR :
Prof. Mukesh Doble is a faculty at the Department of Biotechnology at IIT Madras.He has previously worked in Imperial chemical Industries (ICI) and General Electric (GE) for 20 years.His areas of research are Biomaterials, Biopolymers, and Drug design.He has published 270 papers and 10 books and filed 10 patents (including two US).He has delivered online video courses in Downstream processes and Biostatistics.

COURSE PLAN :

Week 1**:** Introduction

Week 2**:** Standardized Normal Distribution/ T distribution

Week 3**:** F- tests

Week 4**:** ANOVA

Week 5**:** Normality Test/ Odds Ratio

Week 6**:** Weibull distribution

Week 7**:** Hypergeometric/Log normal distributions

Week 8**:** Other designs