REGRESSION ANALYSIS

PROF. SOUMEN MAITY
Department of Mathematics
IISER Pune

TYPE OF COURSE : Rerun | Elective | UG/PG
COURSE DURATION : 12 weeks (20 Jul'20 - 09 Oct'20)
EXAM DATE : 17 Oct 2020

PREREQUISITES : Probability and Statistics
INTENDED AUDIENCE : B.Sc, M.Sc, B.Tech, M.Tech
INDUSTRIES APPLICABLE TO : Goldman Sachs, FinMachenics, Deutsche Bank and other finance companies.

COURSE OUTLINE

Regression analysis is one of the most powerful methods in statistics for determining the relationships between variables and using these relationships to forecast future observations. The foundation of regression analysis is very helpful for any kind of modelling exercises. Regression models are used to predict and forecast future outcomes. Its popularity in finance is very high; it is also very popular in other disciplines like life and biological sciences, management, engineering, etc. In this online course, you will learn how to derive simple and multiple linear regression models, learn what assumptions underlie the models, learn how to test whether your data satisfy those assumptions and what can be done when those assumptions are not met, and develop strategies for building best models.

ABOUT INSTRUCTOR

Prof. Soumen Maity is an Associate Professor of Mathematics at Indian Institute of Science Education and Research (IISER) Pune. He received a PhD from the Theoretical Statistics & Mathematics Unit at Indian Statistical Institute (ISI) Kolkata, India in 2002. He has postdoctoral experience from Lund University, Sweden; Indian Institute of Management (IIM) Kolkata, India; and University of Ottawa, Canada. Prior to joining IISER Pune in 2009, he worked as Assistant Professor at IIT Guwahati and IIT Kharagpur.

COURSE PLAN

Week 1 : Simple Linear Regression (Part A, B, C)
Week 2 : Simple Linear Regression (Part D, E)
Week 3 : Multiple Linear Regression (Part A, B, C)
Week 4 : Multiple Linear Regression (Part D); Selecting the best regression equation (Part A, B)
Week 5 : Selecting the best regression equation (Part C, D)
Week 6 : Multicollinearity (Part A, B, C)
Week 7 : Model Adequacy Checking (Part A, B, C)
Week 8 : Test for influential observations; Transformations and weighting to correct model inadequacies (Part A)
Week 9 : Transformations and weighting to correct model inadequacies (Part B, C)
Week 10 : Dummy variables (Part A, B, C)
Week 11 : Polynomial Regression Models (Part A, B, C)
Week 12 : Generalized Linear Model (Part A, B); Non-Linear Estimation

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