



Instructor Name : SHALABH (IIT Kanpur - Mathematics)

COURSE DURATION : Jan-Feb 2017 **CORE / ELECTIVE :** Both **UG / PG:** Both

PRE-REQUISITES : Mathematics background up to class 12 is needed. Some minor statistics background is desirable.

INTENDED AUDIENCE : UG students of Science and Engineering. Students of humanities with basic mathematical and statistical background can also do it. Working professionals in analytics can also do it.

INDUSTRIES APPLICABLE TO : All industries having R & D set up will use this course.

COURSE OUTLINE : Forecasting is an important aspect of any experimental study. The forecasting can be done by finding the model between the input and output variables. The tools of linear regression analysis help in finding out a statistical model between input variables and output variable which in turn provides forecasting. For example, the yield of a crop depends upon the area of crop, quantity of seeds, rainfall etc. The statistical relation between yield and area of crop, quantity of seeds, rainfall etc. can be determined by the regression analysis and forecasting can be done to know the yield in future. The accuracy of forecasting depends upon the goodness of obtained model. What are its steps and checks required to obtain a good model and in turn, how to do forecasting is being aimed to be taught in this course.

ABOUT INSTRUCTOR : Dr. Shalabh is a Professor of Statistics at IIT Kanpur. His research areas of interest are linear models, regression analysis and econometrics. He has more than 22 years of experience in teaching and research. He has developed several web based NPTEL courses including on regression analysis and has conducted several workshops on statistics for teachers, researchers and practitioners. He has received several national and international award and fellowships. He has authored more than 70 research papers in national and international journals. He has written four books and one of the book on linear models is coauthored with Prof. C.R. Rao.

COURSE PLAN

Week 1:Basic fundamentals, Simple linear regression analysis.

Week 2:Simple linear regression analysis, Multiple linear regression analysis.

Week 3:Multiple linear regression analysis. Diagnostics in multiple linear regression analysis.

Week 4:Forecasting in linear regression models.