

AUDIT COURSE: An Introduction to Statistical Learning Models using R.

Course Name: An introduction to Statistical Learning Models using R

Teaching Scheme:

- 20 hours of classroom sessions.
- At the start of the course, students will be introduced to the R statistical programming package.
- All concepts are best understood if students participate in class sessions with laptops. The classroom sessions will include “hands on” lab sessions

Course Objective:

With the explosion of “Big Data” problems, statistical learning /machine learning has become a very hot field. People with statistical learning and modeling skills are in high demand.

In this course, we cover basic concepts of statistical learning / modeling methods that have widespread use in business and scientific research. We concentrate on the applications and the underlying statistical / mathematical concepts that are relevant to modeling techniques. The labs are designed to familiarize students in implementing the statistical learning methods using the highly popular statistical software package R.

Course Outcome:

- Students will be familiar with concepts related to “data science”, ”analytics”, “machine learning”, etc. These are important topics, and will enable students to embark on highly rewarding careers.
- Students will capable of learning “big data” concepts on their own

Course Content:

Unit No.	Topics and description	Class Room contact hours
1	<ul style="list-style-type: none">• What is Statistical Learning.• Various issues to consider while “modeling”	2
2	Getting Started with R <ul style="list-style-type: none">○ Introduction to the R-Studio user-interface○ Basic commands○ Data Structures in R○ Graphics○ Reading data into R	6
3	Linear Regression models including Lab	4
4	Classification models (Logistic Regression and LDA) with Lab	4
5	Tree based methods (regression trees, classification tree) with lab	4

Evaluation: 3 lab units will require group based projects and presentations of programming results

References:

1. An Introduction to Statistical Learning with Applications in R
Gareth James, Daniela Witten, Trevor Hastie and Robert Tibshirani – 6th edition- Springer Publications