



Statistical Learning & Data Science using R

Aims & Scopes

Join our intensive 9-day workshop on Statistical Learning & Data Science using R, specially crafted for working professionals and data science enthusiasts. Over 30 hours, we'll dive deep into the fundamentals, catering to participants with minimal background knowledge. Each theory session will seamlessly transition into practical demonstrations using the statistical software R. This program offers a well-balanced mix of statistical decision-making and machine learning concepts. Through engaging case studies with real-world datasets, participants will gain hands-on experience, enhancing their ability to implement, comprehend, and interpret analyses effectively. Grab this opportunity to accelerate your skills in Statistical Data Science and Machine Learning with R!

Registration Fees:

For Students: Rs 10000.00

For Others: Rs 15000.00

Venue & Dates:

Venue: Online

Duration: 29 Jun 2024 to 7 Jul 2024

Registration: Opens on 14 May 2024 Closes on 14 Jun 2024



Course Content

Duration	Content
Day1: 29th June,24, 0930-1100	Inaugural Session : History of Statistics
Day1: 29th June,24, 1115-1215	Introduction to R
Day1: 29th June,24, 1400-1500	Descriptive Statistics
Day1: 29th June,24, 1515-1645	Discrete & continuous distributions
Day2: 30th June,24, 0930-1100	Point Estimation
Day2: 30th June,24, 1115-1215	Sampling distribution & Interval Estimation
Day2: 30th June,24, 1400-1530	Testing of Hypothesis
Day2: 30th June,24, 1545-1645	R-Lab
Day3: 01st July,24, 1800-2000	Goodness-of-fit test
Day4: 02nd July,24, 1800-2000	Kernel-Density Estimation
Day5: 03rd July,24, 1800-2000	Principal Component Analysis
Day6: 04th July,24, 1800-2000	Financial data analysis
Day7: 05th July,24, 1800-2000	Linear Model
Day8: 06th July,24, 0930-1215	Multicollinearity & Regularization
Day8: 06th July,24, 1400-1645	Generalized linear model & Classification problem
Day9: 07th July,24, 0900-1000	K-means clustering
Day9: 07th July,24, 1015-1145	EM -algorithm
Day9: 07th July,24, 1200-1300	Decision tree
Day9: 07th July,24, 1500-1600	Online Test
Day9: 07th July,24, 1600-1700	Valedictory

From day three onwards all the sessions will involve hands-on with R.



Materials & Resources

1. Foundation of Statistics

- 1.1. Black, K. (2023). *Business statistics: for contemporary decision making*. John Wiley & Sons.
- 1.2. Freund, J. E., & Miller, M. (2004). *John E. Freund's Mathematical Statistics: With Applications*. Pearson Education India.
- 1.3. Rice, J. A., & Rice, J. A. (2007). *Mathematical statistics and data analysis* (Vol. 371). Belmont, CA: Thomson/Brooks/Cole.

2. Statistical Learning

- 2.1. James, G., Witten, D., Hastie, T., & Tibshirani, R. (2013). *An introduction to statistical learning* New York: springer.
- 2.2. Bishop, C. M. (2006). Pattern recognition and machine learning. *Springer google schola*,

3. Stochastic Modelling

- 3.1. Shreve, S. E. (2004). *Stochastic calculus for finance II: Continuous-time models* (Vol. 11). New York: springer.
- 3.2. Klebaner, F. C. (2012). *Introduction to stochastic calculus with applications*. World Scientific Publishing Company.
- 3.3. Borovkov, K. (2003). *Elements of stochastic modelling*.

4. R software for data science

- 4.1. Kerns, G. J. (2010). *Introduction to probability and statistics using R*. Lulu. com.
- 4.2. Albert, J., & Rizzo, M. (2012). *R by Example*. Springer Science & Business Media.
- 4.3. http://zoonek2.free.fr/UNIX/48_R/all.html

Assessment

It will be an online test for an hour. In the AN session on the last day of the workshop. Certificates will be issued based on the attendance throughout the sessions & performance of the test.

Course Instructors

Prof. Nitin Gupta (Coordinator)

Prof. Swanand R Khare (Co-Coordinator)

Prof. Somesh Kumar

Prof. Buddhnanda Banerjee

Mr. Surojit Biswas

Mr. Raju De

Mr. Subho Halder

Mr. Sarikul Islam

Mr. Gaurav Kandpal

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