



Hands-on Training on

Research Data and Statistical Analysis using R programming

Five-day hands-on Training programme on "Research Data and Statistical Analysis using R programming" Jointly organised by Gujarat Biotechnology Research Centre and The Information and Library Network Centre Funded by Gujarat State Biotechnology Mission

Sponsored by:

॥ जीवो ब्रह्मैव नापरः ॥



13th – 17th
December
2021



About GBRC

Government of Gujarat has recognized the importance of the science of biotechnology and its potentiality. With the vision to develop biotechnology sector and to provide global level opportunities, research and development in the state, the government in the year 2004, established Gujarat State Biotechnology Mission (GSBTM) as a state nodal agency dedicated to biotechnology. It has taken another important leap with a vision to build biotechnology based research and development activities by establishing an independent organization namely, Gujarat Biotechnology Research Centre (GBRC) under the Department of Science and Technology.

Major strengths of GBRC are

1. *Bio-banking*
2. *Bioprospecting*
3. *Genomics*
4. *Bioinformatics*

Mission & Vision

Gujarat Biotechnology Research Centre will focus upon development of technology through research and development in the areas of agriculture, healthcare, environment, animal, marine and bioinformatics.

Conduct cutting edge research & innovation leading to Product/ Prototype/ Process development with application in healthcare, agriculture, environment, marine

To provide BT based solutions for regional problems of Gujarat

To provide state of art Shared Laboratory facilities for researchers and academician

To undertake contract/sponsored research with industries and institutions

Development of National & International collaborations

About INFLIBNET

The Information and Library Network (INFLIBNET) Center is an autonomous Inter-University Center (IUC) of the University Grants Commission (UGC) located in the Infocity, Gandhinagar. Major activities and services of the Center are geared towards modernization of academic libraries and information centers, promotion of information transfer and access, support scholarship, learning and academic pursuits. The Centre acts as a nodal agency for networking of libraries and information centers in universities, institutions of higher learning and R & D institutions in India. The Centre was established as an independent autonomous Inter-University Centre of the UGC in May 1996 and set out to be a major player for promoting scholarly communications among academicians and researchers across the country. The technology being a driving force in the contemporary education system, the center has taken-up a number of initiatives for the benefit of the academic community in India. Major initiatives include i) IndCat, a unified online catalogue of books, these and journals available in majority university libraries in India; ii) SOUL 3.0, state-of-the-art integrated library management software, iii) e-Shodh Sindhu for extending access to selected scholarly electronic journals and data base to eligible universities, centrally-funded technical institutions and colleges in different discipline; iv) Shodhganga for enabling online submission of doctoral theses and dissertations by research scholars in open access digital repository; v) Shodhgangotri for facilitating research scholar to submit approved synopsis of research proposal submitted to their universities; vi) Open Journal Access System (OJAS) to facilitate faculty and researchers to Indian universities to launch their open access journals on OJAS platform; vii) InfoPort: INFLIBNET's Subject Gateway for Indian Electronic Resources; viii) e-



PG Pathshala, a project assigned to the UGC by NME-ICT, where in e-content are being developed in 70+ subjects at postgraduate level; ix) IRINS-VIDWAN, a premier database of profiles of scientists and faculty member working in leading academic institutions and other R & D organizations involved in teaching and research in India; x) Vidya-Mitra, an Integrated e-content portal : a web based portal consisting of all e-content with funding from NME-ICT, MoE; xi) ICSSR Data Service: Social Science Data Repository for setting up of repository and hosting of NSS and ASI datasets into the data repository; and xii) National Institutional Ranking Framework (NIRF), a project assigned by Ministry of Education for ranking institutions of higher education across the country.

Objectives of the workshop

R is an open source programming language. It has been developed for statistical computing and graphics supported by R Foundation. The R language is widely used among statisticians and data miners for statistical software and data analysis Polls, data mining surveys. R includes conditional loops; user defined recursive functions and input and output facilities. It also provides graphical facilities for data analysis and display. R is a very flexible language. It does not necessitate that everything should be done in R itself. It allows the use of other tools, like C and C++ if required. R has an effective data handling and storage facility. It provides an extensive, coherent and integrated collection of tools for data analysis.

The objectives of the workshop are as follows:

1. Introduce basic functioning of R and RStudio
2. Master the use of the R and RStudio interactive environment
3. Understand the different data types and structures in R
4. Statistical analysis of different data types
5. Graphical representation of biological data

About workshop

The aim of the workshop is to introduce participants to the statistical analysis and data visualization employing R programming language. The theoretical and practical sessions will be conducted to cover the following topics:

- Introductions to R
- Concept of R programming
- Data preparation
- Importing, exporting data and saving results
- Installation of packages and utility of various functions in R
- Measures of central tendency and dispersions
- Data visualization (heatmap, volcano plot, bubble plot, box-plot, area chart, pie chart, bar chart using ggplot2/gplots)
- Testing of hypothesis (parametric/non-parametric test, one-way/two-way ANOVA)
- Simple and multiple regression analysis
- Application of R programming in research

Resource persons

The resource persons are scientist/data manager proficient in the field of bioinformatics and statistics. They are well-versed with the data analysis in R.



Target participants

Scientist, Faculty, Research Scholars, PG students, Ph.D. Scholars, Industrialists. A maximum of 10 candidates will be selected based on relevance to their study.

Duration: Five Days: (13th – 17th December, 2021)

Venue

Gujarat Biotechnology Research Centre
Department of Science and Technology
6th Floor, MS Building,
Gandhinagar 382016, Gujarat, India.

Workshop fees

The registration fees for students Rs. 1000/-, for faculty Rs. 2000/- for Industrialist Rs. 3000/- without accommodation. It covers cost of training programme, tea and lunch during the training period. Selected candidate will have to pay fees through SBI e-collect only.

Registration

The application for registration to the workshop should be submitted online at <https://io.gbrc.res.in/R2021> on or before 3rd December, 2021. The absence or irregularity during the workshop will be considered as discontinue of participation.

Other Information:

Candidate must bring their own laptop notebooks for hands-on sessions with RStudio installed.

Patron

Prof J P Singh Joorel
Director, INFLIBNET Centre

Prof. C. G. Joshi,
Director, GBRC

Team


INFLIBNET Centre

Sh. Yatrik Patel, Scientist-E(CS)
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How to reach GBRC

