Online Certificate course on "R Programming for Biologists"

(Hands on online training on fundamentals of R programming and data analysis for biologists)

KSBB has invited applications for an online certificate course on **"R Programming for Biologists"**. The course is intended for post graduates, PhD students, researchers, teachers, scientists etc.

Duration	:	Two months
Registration Starts on	:	5th April 2023
Registration ends on	:	20th April 2023
Course launching	**:**	**1st May 2023**
Target Group	:	Post graduates, PhD students, researchers, teachers, scientists etc.
Course Fee	:	**1000 for students & 2000 for faculties**
Course co-ordinator	:	Dr.C.S.Vimal Kumar C S, Principal Scientific Officer, KSBB

Registration site :https://www.keralabiodiversity.org

Why R program ?

Emergence of new techniques and by the advent of various computational skills huge data is produced in different disciplines. The task of extracting meaning from large, complex datasets and presenting them in easily interpretable ways to support decision-making in an increasingly complex world is one of the future challenges. The branch of science which deals with the above challenges and aforementioned issues are popularly known as Data Science. It is the science of extracting actionable, relevant information that helps to make informed decisions. R program is the most powerful, simple, open source language used for data analysis and presentation and hence the same is the first choice of data scientists. The main advance of R program is that the syntax of the same is so simple even can understand by a person without prior programming experience/skills and moreover the data visualization and presentation are also very easy. R has an open-source library which is supported by its growing number of users. Due to a large number of researchers and statisticians using it, new ideas and technologies often appear in the R community first.

What Does the KSBB Course on R Programming Cover?

The course has been designed to give course takers an understanding of R assuming that they do not have any prior programming knowledge and experience. More than 10,000 different packages and extensions of R that help to solve all sorts of problems in data analysis and hence it is intended to provide a basic idea on R program and also hands on online data analysis training for selected R packages. The training will be conducted with the support of sample data with special emphasis on biodiversity data analysis. The participants will also be

provided with training on data visualization and presentation with the aid of the famous data visualization package "ggplot2.

How to apply

Online registration can be done by interested participants on or before 20th April, 2023, using the link available in the website:https://www.keralabiodiversity.org. Course Fee (1000 for students & 2000 for faculties) can be remitted to the account provided below.

Bank	:	IDBI BANK, KARAMANA BRANCH
Account Holder	:	Member Secretary, KSBB
Account Number	:	**0889102000003360**
IFSC	:	IBKL0000889

Mode of course Delivery

The course is conducted in a virtual classroom environment which is completely online, through Moodle Learning Management System. Course content includes lecture videos, notes, source code for hands-on practice, sample data for data analysis, assignments, quiz, live interactive doubt clearance sessions, group discussion, online exam etc. The course will be covered over 12 hours of online lectures, which can be viewed as per course takers' convenience. Besides there will be live hands-on online training /doubt clearing sessions every Saturday and Sunday from 5.30 to 6.30 PM, the participants can attend any of the sessions as per the convenience. The participants can post queries and doubts in the virtual classroom at any time. A module test containing a set of multiple-choice questions will be conducted after completion of each module. An assignment will also be given at the end of each module. In addition, a final test based on multiple-choice questions will be conducted. A course certificate will be issued to the participants on successful completion of the course and the criteria to obtain the certificate will include the overall scores achieved in each module tests, assignments final testand attendance.

Terms and Conditions

- The participants are not authorised to copy, modify, reproduce, re-publish, upload and distribute any of the Course Materials without prior written permission from KSBB.
- The participants are not authorised to record video or audio of the online classes by screen recording or any other means.
- In case any registered candidate could not attend the online interactive session due to technical issues at their side there will not be any refund of the course fee and the sessions will not be repeated.
- In case the online interactive session is cancelled /postponed due to some technical issue at KSBB side and if the new date is not convenient to the candidate, there will not be any refund of the course fee.
- Certificates will be issued to the participants based on the overall performance in each module test, assignments final test, percentage of attendance in the interactive sessions.

Course Curriculum

Over the duration of this online certificate course, participants will work through the following modules.

Module I : Introduction to R program

- Why R program ?
- Installation of R & R Studio.
- Data Types in R Programming Language
- Variables of R Programming Language
- Arithmetic Operators

Module II : Data and File Management & Operators

- Data and File Management - Types of Input, CSV Files, Excel file etc.
- Reading and writing data
- Relational and Logical Operators

Module III : Statistical data analysis & Functions

- Mean, Mode, Median
- Measures of Variability - Standard Deviation
- Matrix&Array
- Functions
- Strings

Module IV : Statistical data analysis

- Concept of statistical significance
- t-test
- F-test
- One-way &Two-way ANOVA
- Chi square test

Module V : Data visualization in R

- Box plot, Scatter plot, Bar chart, etc.
- Data visualization through ggplot2
- Heat maps
- Correlogram

Module VII : Packages in R, Data analysis and data presentation

Fundamentals of different R packages used by biologists with special emphasis on biodiversity, botany, ethonobotany etc.

Module VI : Advanced Statistical data analysis

- Tukey HSD test
- Compact Letter Display
- Correlation Analysis, Regression Analysis and Principal Component Analysis

Module VIII :Hands on online training using selected data sets for data analysis and presentation.