

One Week

Online

**Student Development Program  
on**

**R Programming**

**(September 23-29, 2021)**

Organized by



**Department of Mathematics  
Rajiv Gandhi University  
Arunachal Pradesh-791112**

in collaboration with



**Spoken Tutorial Project, IIT  
Bombay**

#### **ABOUT THE INSTITUTION**

Rajiv Gandhi University (A central University) (formerly Arunachal University) is the premier institution for higher education in the state of Arunachal Pradesh and has completed thirty-six years of its existence. Late Smt. Indira Gandhi, the then Prime Minister of India, laid the foundation stone of the university on 4th February 1984 at Rono Hills, where the present campus is located. Ever since its inception, the university has been trying to achieve excellence and fulfil the objectives as envisaged in the University Act. The University received academic recognition under section 2(f) from the University Grants Commission on 28th March, 1985 and started functioning since 1st April, 1985. It received financial recognition under section 12-B of the UGC on 25th March, 1994. Since then Rajiv Gandhi University then Arunachal University has carved a niche for itself in the educational scenario of the country following its selection as a University with potential for excellence by a high-level expert committee of University Grants Commission from among universities in India. The University was converted into a Central University with effect from 9th April 2007, according to a notification by the Ministry of Human Resource Development, Government of India.

#### **ABOUT THE DEPARTMENT**

The department of Mathematics is an important constituent of the Faculty of Basic Sciences since 2005, the year when it was established. The department offers two-years (Four Semesters) M. A./M. Sc. programme in Mathematics & Computing. In addition, the department offers Ph. D. programmes in Mathematics in different research areas of Pure and Applied Mathematics. The faculty members are specialized in various areas of Algebra, Analysis and Applied Mathematics. The department aims to train people who are oriented towards research and teaching in advanced areas of Pure and Applied Mathematics. The objectives of the department are to impart quality education through M. Sc., and Ph. D. programmes, promote theoretical and applied research, and develop interaction with other departments of the university and other organizations.

#### **ABOUT SPOKEN TUTORIAL**

Spoken Tutorial is a multi-award winning educational content portal. Here one can learn various Free and Open Source Software all by oneself. The self paced, multi-lingual courses ensure that anybody can learn from any place, at any time and in a language of their choice.

#### **BACKGROUND**

R is a language and environment for statistical computing and graphics. It is an integrated suite of software facilities for data manipulation, calculation and graphical display. It includes

- A well developed simple yet effective programming language which includes conditionals, loops, user defined recursive functions and input and output facilities.
- An effective data handling and storage facility.
- A suite of operators for calculations on arrays, matrices in particular.
- A large, coherent, integrated collection of intermediate tools for data analysis.
- Graphical facilities for data analysis and displaying either on screen or on hard copy.

R is being used by statistician, data miners, data scientists, market analyst, social scientist, etc. due to its wide applications in various fields of data analysis and data mining surveys. R has become an integral part of courses in most of the higher educational institutions around the world.

R is available as free software under the terms of the Free Software Foundation's GNU (General Public License) in source code form.

#### **TARGET GROUPS**

- Students of universities /colleges.
- Research Scholars.

***Number of participants is limited to 150.***

## METHODOLOGY

- This online Student Development Program is planned to be purely in online distance education mode, which is highly conducive for the participants to learn from their own residence. This program will be conducted in collaboration with Spoken Tutorial Project, IIT Bombay.
- The participants will be provided with the links to the pre-recorded videos and course materials of Spoken Tutorial.
- The participants will also be given assignments which will be mandatory for all in order to get the e-participation certificate.
- The participants will have to pass an online R-test, remotely conducted by IIT Bombay, in order to successfully complete this training. A course completion certificate will also be given to the successful participants by Spoken Tutorial Project, IIT Bombay.

## REGISTRATION

**Mode : Online**

**Link :**

[https://spoken-tutorial.org/training/list\\_events/ongoing/?state=3&foss=50&host\\_college=1213&event\\_start\\_date\\_after=&event\\_start\\_date\\_before=&event\\_end\\_date\\_after=&event\\_end\\_date\\_before=&event\\_type=sdp](https://spoken-tutorial.org/training/list_events/ongoing/?state=3&foss=50&host_college=1213&event_start_date_after=&event_start_date_before=&event_end_date_after=&event_end_date_before=&event_type=sdp)

**Registration Fee:** Rs. 236.00 (including GST) to be paid at the time of registration to Spoken Tutorial Project, IIT Bombay

**Last Date of Registration: 21<sup>st</sup> September, 2021**

## OBJECTIVES

- To impart the basic knowledge of R Programming languages to the students, research scholars.
- To strengthen the technical skills of the students for career enhancement.

## ORGANIZING COMMITTEE

### Chief Patron

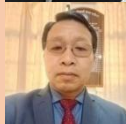


Prof. Saket Kushwaha  
Vice-Chancellor  
Rajiv Gandhi University

### Patrons



Prof. Amitava Mitra  
Pro Vice-Chancellor  
Rajiv Gandhi University



Dr. Nabam Tadar Rikam  
Registrar  
Rajiv Gandhi University



Prof. Sanjeev Kumar  
Dean, Faculty of Basic Sciences  
Rajiv Gandhi University

### Convener



Dr. Nipen Saikia  
Head i/c, Dept. of Mathematics, RGU  
(Contact No. +91 9435507484  
E. Mail: nipen.saikia@rgu.ac.in)

### Secretary



Mrs. Dakjum Eshi  
Assistant Professor,  
Dept. of Mathematics, RGU.  
(Contact No. +91 9862912689/  
E. Mail: dakjum.eshi@rgu.ac.in)

### Members

Prof. Sahin Ahmed,  
Dept. of Mathematics, RGU.

Dr. Saifur Rahman, Associate Professor,  
Dept. of Mathematics, RGU

Dr. Nazeer Ansari  
Guest Assistant Professor,  
Dept. of Mathematics, RGU

## OUTCOMES

The programme will help the participants to learn and excel in R programming language. It is expected that after this training, the participants would be able to do data analysis efficiently with the help of R programming. It will also help the participants, to get well acquainted with various applications of R in data science and statistics.

## SDP CONTENTS

- Introduction to basics of R
- Introduction to Data Frames in R
- Introduction to RStudio
- Introduction to R script
- Working directories in RStudio
- Indexing and Slicing Data Frames
- Creating Matrices using Data Frames
- Operations on Matrices and Data Frames
- Merging and Importing Data
- Data types and Factors
- Lists and its Operations
- Plotting Histograms and Pie Chart
- Plotting Bar Charts and Scatter Plot
- Introduction to ggplot2
- Aesthetic Mapping in ggplot2
- Data Manipulation using dplyr Package
- More Functions in dplyr Package
- Pipe Operator
- Conditional Statements
- Functions in R