ONE – WEEK FACULTY DEVELOPMENT PROGRAM

ON

DATA ANALYSIS USING OPEN SOURCE STATISTICAL PACKAGE "R"

DATES: 20th TO 26th FEBRUARY 2017

Organized by

GUJARAT TECHNOLOGICAL UNIVERSITY

CENTRE FOR GOVERNANCE SYSTEMS

ABOUT THE PROGRAMME

In today's world it is most difficult to avoid the term 'research'. It is because of the continuous efforts of the researcher that we are experiencing a giant leap in this century. A research is initiated to have some practical consequences. This programme has been designed to provide clear guidelines on how to undertake research as well as highlights the realities of undertaking research, including more common pitfalls. Looking at these requirements of research, the Centre for Governance Systems, Gujarat Technological University, Ahmedabad, has planned to organize this Faculty Development Program on Open Source Statistical Package R.

What is R?

R is a free software environment for statistical computing and graphics. It compiles and runs on a wide variety of UNIX platforms, Windows and MacOS. R provides a wide variety of statistical (linear and nonlinear modelling, classical statistical tests, time-series analysis, classification, clustering, …) and graphical techniques, and is highly extensible. One of R's strengths is the ease with which well-designed publication-quality plots can be produced, including mathematical symbols and formulae where needed. With interest in the language growing, as shown on language popularity indexes such as Tlobe, PyPL, and Redmonk, R first appeared in the 1990s and has served as an implementation of the S statistical programming language.

Why R?

It is free, multiplatform (this enables easy collaboration) and open source (it ensures the reproducibility of the analysis). In R new packages are available as quickly as the theory is published. Also there is a lot of documentation available over the internet.

Note: The Programme is for Faculties/ Research Scholars/ Industry Delegates. Students who have not completed their post-graduation will not be permitted to attend this FDP.

OBJECTIVE

To provide the participants exposure to open source statistical package "R" for their research and data Analysis work.

- Class room sessions accompanied with laboratory sessions.
- Case Analysis
- Individual exercises

PEDAGOGY

WHO SHOULD ATTEND?

- Faculty members of graduate and post graduate programmmes in colleges and universities in the field of Engineering, Management, Pharmacy, Commerce, Arts & Social Sciences.
- Research scholars pursuing M.Phil/Ph.D.
- Students who have not yet completed their post-graduation will not be permitted to attend this FDP.

All participants of the FDP on 'DATA ANALYSIS USING OPEN SOURCE STATISTICAL PACKAGE "R" ' will be awarded a GTU – CGS certificate on successful completion of the programme.

GTU CERTIFICATE

Contents:

- ✓ Introduction to R and R Studio
- ✓ Data Coding
- ✓ Data Management
- ✓ Data Transformation
- ✓ Descriptive Statistics [Mean, Median, Mode, Standard Deviation, Skewness, Kurtosis]
- ✓ Graphical Representation
- ✓ Normality Testing of the data
- ✓ Hypothesis Testing: An Introduction
- ✓ Parametric Testing [One Sample T Test, Independent Sample T Test, Dependent Sample T Test, One Way ANOVA, Two Way ANOVA]
- ✓ Correlation Analysis
- ✓ Non – Parametric Testing [Chi-square test, Runs Test, Mann Whitney U Test, Kruskal Wallis Test, Friedman Test, Wilcoxon Test]
- ✓ Regression Analysis [Simple and Multiple Regression Analysis]
- ✓ Principal Component Analysis (PCA) & Perceptual Maps
- ✓ Confirmatory Factor Analysis (CFA) and Structural Equation Modeling (SEM) with R
- ✓ Association Rules for Market Basket Analysis

Duration:

Monday, 20th February, 2017 to Sunday, 26th February, 2017 (one-week)

Timings:

10.00 am to 5.30 pm.

Venue:

GTU - Chandkheda Campus, Nr.Vishwakarma Government Engineering College, Visat - Gandhinagar Highway, Chandkheda, Ahmedabad – 382424, Gujarat.

Seats:

Limited Seats available on first-cum-first serve basis, participants are requested to register using online registration link mentioned below.

ABOUT THE ORGANISATION

Gujarat Technological University has been set up under Gujarat Technological University Act of 2007. During the short span of 8 years of its existence, GTU has bagged many national and international awards like The Best Jury Award for Interface between Academia and Industry in Higher Education, the Information Communication Technology (ICT) Enabled University of the year award in E-India 2009, Manthan Award 2009, Digital Learning WES 2011 Award, AIMS International Innovative University Award 2013, World Education Award 2013 for its project on Active Learning 2013, Best University in Internationalization of its Faculty and Students under Government University category - CCI Technology Education Excellence Awards 2013, CMAI's NTA ICT World Communication Award 2013 for being a Pioneer in ICT Education, Best Higher Education University of the Year award by ASSOCHAM India 2014 etc.

GTU has established 15 Post Graduate Research Centres, which are designed to work as examples of good and relevant research. The Centres are to work as catalysts for infusing the spirit of innovation and research in the Colleges through multi-College joint research projects and by actively involving postgraduate students in research, development and consultancy projects. These Centres are required to establish active linkages with the industry and research institutions in India and abroad.

GTU has started working as a Monitor for Good Governance, which will make it possible to objectively determine how well the governance systems are working. It is initiating studies in the field of Governance System in Businesses, Industries, Universities, Hospitals, NGOs and Governments, which may help organizations improve their working, through new policies or through modification of existing policies, protocols and management structures. The Vision and goal CGS is to be a leading Centre for Excellence in Research, Teaching, Training and Advocacy in the field of Governance through capacity building, knowledge creation, and dissemination. The PG Research **Centre for Governance Systems (CGS)** at GTU organizes its flagship event "CEOs in the Classroom" throughout the academic year.

RESOURCE PERSONS

Dr. Dhaval Maheta

He is doctorate in management and currently working as an Assistant Professor, Department of Business and Industrial Management, VNSGU, Surat. He has thirteen years of Post – Graduate teaching experience over and above industrial experience with Multinational Finance Companies such as ICICI Bank and HDFC Ltd. His matter of interest is Financial Management, Financial Derivatives, Production Management, Corporate Taxation, Quantitative Techniques, Econometrics and Design of an Experiment. He is visiting faculty in Southern Gujarat Chamber of Commerce and Industry, Surat in the area of Export Import Finance and Exchange Controls. At present 5 students are carrying out Ph.D under him. He has presented and published 12 research papers in National and International Conferences. He has been the key resource persons for the Research Methodology workshops organized at various levels including NITs. He has also published book on "Minitab" software with ISBN No. 9788174468710 / 8174468714 used for analyzing data using Minitab Software. He has organized various Faculty Development Programme on Data Analysis using SPSS, AMOS, Minitab, E-views, Gretl, Matlab, Design Expert, etc. More than 1000 faculties have been trained for various research softwares. At present he is working on minor research project titled "Effect of Money Supply on Stock Exchange". You can contact him on Email:dhavalmaheta007@rediffmail.com, (M) 099980 28491.

Dr. Hitesh Parmar

He is currently working as Assistant Professor in Department of Business and Industrial Management, VNSGU, Surat. He has 8 years of Post Graduate Teaching experience and 1.5 Year of industry experience. He has taught Subjects like Quantitative Methods and Production and Operations Management. He has delivered guest lectures in various MBA institutes. He has published research papers in various journals and books. He has participated in various International and National Conferences. He is actively conducting Faculty development Programmes and Workshops in the area of Research Methodology using SPSS, MINITAB and E Views. He has trained more than 700 faculties in the above mentioned subjects. He can be contacted on: drhitesh.parmar23@gmail.com.

Dr. Ritesh Patel

He is currently working as an Assistant Professor at Centre for Governance Systems (CGS) a PG Research Centre at Gujarat Technological University (GTU), Chandkheda, Ahmedabad. He has gained his MBA degree in Marketing from Hemchandracharya North Gujarat University, Patan and Ph.D. in the area of Marketing from Department of Management, Sardar Patel University, Anand. He has also cleared UGC-NET in the subject of Management. He has sound academic experience of 6 years at Post Graduate Level and 5 years Industry experience at Managerial level. Prior to joining GTU he worked as Academic Associate with Indian Institute of Management Ahmedabad (IIM-A); He has also worked as Assistant Professor at Institute of

Law, Nirma University for a short stint. He has presented several research papers in various national and international level conferences. He has published around 25 research papers in various referred journals of national and international repute. Based on his thesis he has also published a book 'Brand Management in Retail Banking', with LAP LAMBERT Publishing, Germany. He has also published a reference book on Research Methodology, with Ahmedabad based publisher. His area of consulting, research and teaching are Branding, Retailing, CRM, Research Methodology, Quantitative Techniques, Consumer Behaviour and Good Governance. You can write to him on: (E) profriteshkpatel@gmail.com, (M) 9687100199.

Dr. Amit Saraswat

He is an electrical engineer from IIT- Roorkee. He has a total of 21 years of experience. Seven years of the which is in academics and 14 years with the industry. He started his career with Tata Motors where he worked in different departments. He has authored papers which have been published in refereed journals. Currently, he holds the position of VP- Data Sciences at Lendingkart technologies, which is one of the largest Fintech companies in India. The team consists mostly Data scientists drawn from IITs and other premium institutes. His interest areas are Artificial Intelligence, Deep Learning, and Machine learning. He is currently working in the areas of deep neural nets, Natural Language programming. He is a consultant to the Ministry of skill development for developing analytics based solutions for machine learning, IDBI Bank for implementing quantitative risk management systems, Glaxo pharma for developing NLP based Electronic health records. He can be contacted on saraswatamit@yahoo.com.

Dr. Prashant Joshi

Dr. Prashant Joshi studied Big Data and Analytics course at University of Essex. He worked as a visiting professor at Cape Breton University, Canada. He also worked as a Professor with I-Shou University, Taiwan in its Department of International Finance where he received Best Professor Appreciation Award. He visited UK, Germany, Switzerland, Brussels, France and Luxemburg. Dr. Joshi taught all level of Statistics and Econometrics course, Time Series Analysis, Research Methodology, Micro and Macroeconomics, Financial Management, Money and Banking, Investment Analysis, Behavioral Finance and Portfolio Management in India and abroad. He is now working as Dean, Faculty of Commerce and Management and Professor and Head, Department of Management, UKA University, India. Dr Joshi has more than 16 years of Industry, teaching and research experience. Dr Joshi has published 5 international books in the subject of Data analysis, Finance, Statistics and written more than 45 research papers in the national and international journals. He has undertaken useful minor and major research projects. He has delivered lectures in Refresher Courses, Training Programmes, national and international level Workshops. Besides, he has organized number of training programmes, workshops, national level conferences, FDPs and seminars. He is proficient in use of RATS, EViews, SPSS, SAS, R, G@RCH and STATA. He can be contacted on: prashant.joshi@utu.ac.in.

Dr. Keyurkumar M Nayak

He is a renowned Corporate Consultant, Coach working with Laxmi Vidyapeeth, Sarigam who had presented papers in 36 International and 40 National Conferences including IIM –A, IIM K, MDI Gurgaon, and PIMR Indore. He has also published more than 25 papers in journals and edited books and guided more than 100 MBA Students for projects, 01 research scholar has completed M.Phil successfully and 4 research scholars have registered under his guideship for Ph.D. Dr Nayak has also reviewed International Papers of Villanova University, Pennsylvania, USA and also chaired sessions in the international conferences.He has more than 15 years' experience in academics and industry and worked as a corporate trainer and resource person for many Training Programme such as Data Analysis through SPPS, Finance for Non Finance Managers, Corporate Valuation, Communication Skills and Soft-Skills Training. He was University Topper in Business Administration at UG Level and received Best Paper Award in PIMR International Conference and Best Paper Award in International Conference at Parul Institute of Management Studies, Baroda. He took Laxmi Institute of Management, Sarigam at 5th position in entire state of Gujarat and 2 students stood University Topper in the in Public Policy subject taught by him and also played pivotal role in setting up MBA and Engineering Colleges. He can be contacted on: keyurdhuya@gmail.com

Mr. Saurabh Agarwal

He is a graduate and post graduate engineer from IIT K and IIT D. At present he is associated with HBTU Kanpur. He is a consultant to IBM and UNESCO for Business Analytics. He has published paper on Integrating Alternate Payment Channels and was presented in The Fourth International Conference on Payment Channels organized by Banknet India at Hotel Taj Land Ends, Mumbai. His paper on Strategic Business Decision for Managers – An approach to ERP Evaluation was presented at conference on Role of Decision Making in Management organized by IMT Nagpur. The paper was then published as a chapter in a book Role of Management Science in Decision Making published by Excel India Publishers, New Delhi. It is also used as a text book. He has interest in Data Mining, Data Analysis, Business Analytics, Structural Equation Modelling, Multivariate Analysis and works on platforms like R, Amos, Clementine. He has has guided academic and industry projects in India and abroad. He has guided projects for Saudi Aramco biggest oil refinery in world and Kiatanin Bank Bangkok. He can be contacted at saurabh.inc@gmail.com.

DETAILED SCHEDULE

Day-1: Monday, 20th February, 2017(Dr. Dhaval Maheta & Dr. Hitesh Parmar)

Schedule	Time
Registration, Tea & Breakfast	**10.00 AM - 10.30 AM**
About R And R Studio, Data Management, Data Coding	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Descriptive Statistics [Mean, Median, Mode, Standard Deviation, Skewness, Kurtosis]	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Normality Testing Of The Data	3.45 PM - 5.30 PM

Day-2: Tuesday, 21st February, 2017(Dr. Dhaval Maheta & Dr. Hitesh Parmar)

Schedule	Time
Tea & Breakfast	**10.00 AM - 10.30 AM**
Hypothesis Testing Of The Data	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Analysis Of Variance	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Text Anaytics	3.45 PM - 5.30 PM

Day-3: Wednesday, 22nd February, 2017(Dr. Prashant Joshi)

Schedule	Time
Tea & Breakfast	**10.00 AM - 10.30 AM**
Advanced Graphics	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Unsupervised Learning-1	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Unsupervised Learning-2	3.45 PM - 5.30 PM

Day-4: Thursday, 23rd February, 2017(Mr. Saurabh Agarwal)

Schedule	Time
Tea & Breakfast	**10.00 AM - 10.30 AM**

Parametric & No Parametric Test In R With Interpretations	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Correlation Analysis	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Linear Regression Analysis	3.45 PM - 5.30 PM

Day-5: Friday, 24th February, 2017(Dr. Ritesh Patel & Dr. Keyur Nayak)	
Schedule	**Time**
Tea & Breakfast	**10.00 AM - 10.30 AM**
Market Basket Analysis Using R	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Covariance Based - Strucutred Equation Mdoeling (Sem) Using R	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Partial Least Squares Based - Structured Equation Modeling (Sem) Using R	3.45 PM - 5.30 PM

Day-6: Saturday, 25th February, 2017(Dr. Amit Saraswat)	
Schedule	**Time**
Tea & Breakfast	**10.00 AM - 10.30 AM**
Clustering using R	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Classification using R	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Classification using R	3.45 PM - 5.30 PM

Day-7: Sunday, 26th February, 2017(Dr. Ritesh K. Patel)	
Schedule	**Time**
Tea & Breakfast	**10.00 AM - 10.30 AM**
Practice Session	10.30 AM - 01.00 PM
Lunch Break	**01.00 PM - 02.00 PM**
Practice Session	02.00 PM - 3.30 PM
Tea Break	**3.30 PM – 3.45 PM**
Certificate Distribuition	3.45 PM - 5.30 PM

PROGRAMME FEE

Category	Fees (INRs.)
For GTU affiliated college/institute faculty/ Research Scholars	2000 / -
For other Academic institute /college faculty/ Research Scholars	2500 / -
For Industry Delegates	3000 /-

NOTE: Programme fee includes study material, lunch, and tea. The organizer reserves the right to change the schedule and/or venue of the programme with prior notice. Fees are subject to change without notice. Fees are not refundable in any case.

ONLINE PAYMENT PROCESS

We would request you to check the online registration form link given under head **Registration Guidelines,** before making the payment. Kindly do not proceed with payment if the registration is closed.

All payment must be made online using following link:

https://www.onlinesbi.com/prelogin/institutiontypedisplay.htm

Step 1: State of Corporate/Institution: Gujarat

Step 2: Type of Corporate/Institution: Educational Institutions

Step 3: Educational Institutions Name: GUJARAT TECHNOLOGICAL UNIVERSITY

Step 4: Select Payment Category: Registration Fees for Conference

Step 5: Conference Name: GTU-CGS FDP 2017

Step 6: Fill in your personal details and select the mode of payment

Step 7: At the end, collect the Payment Ref. No. starting with "DU".

Step 8: Using Payment Ref. No. fill in the online Delegate Registration Form.

Step 9: **Save your payment receipt and mail it to cgs@gtu.edu.in**

For instructions and query related to online payment, kindly refer:

http://www.gtu.ac.in/ImpCircular/SBIPayment%20Instructions.pdf

REGISTRATION GUIDELINES

Kindly make sure you keep Payment Ref. No. with you while registering.

Kindly visit following link to register yourself for the FDP:

http://tinyurl.com/FDP-GTU-R

ACCOMMODATION (OPTIONAL)

The provision of basic accommodation is available on prior request. Kindly write to: cgs@gtu.edu.in with details of your accommodation plans and requirements. Registration fees does not include accomodation charges. All charges of accomodation and travelling will be borne by candidates themselves.

IMPORTANT INSTRUCTIONS

- The certificate of participation will be issued only after successful completion of the faculty development programme.
- Participant have to bring their personal laptops for effective practical learning with software "R" pre-installed on their laptop. Download "R" from following link: https://cran.r-project.org/bin/windows/base/
- Once registered, it is not possible to cancel or transfer the registered seat. Registration fees in any case is not refundable.

ORGANIZING COMMITTEE

Chief Patron	Conveners
Prof. (Dr.) Navin Sheth *Vice Chancellor, GTU* **Patron** **DR. J. C. LILANI** *Registrar (I/c), GTU*	**DR. RITESH K. PATEL** *Assistant Professor, Centre for Governance Systems, GTU* Email Id: ap_cgs@gtu.edu.in Desk No.: +91-79-23267585 Cell No.: +91-9909944890 **MS. AVANI MEHTA** *Research Assistant*, Centre for Governance Systems, GTU Email Id: ra_cgs@gtu.edu.in Desk No: +91-079-23267586 **MS. NIDHI DUTTA** *Officer on Special Duty, GTU* Email Id: osd_nidhi@gtu.edu.in Desk No.: +91-79-23267573

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