

St. Joseph's Degree & PG College  
Department of Mathematics & Statistics  
Monthly Report September 2016-2017

### **Lecture Series on Role of Mathematical Sciences in Digitalization**

The Science Academies Lecture Series Workshop on “**Role of Mathematical Sciences in digitalization**” convened by Prof. V. Kannan, HCU was organized by the Department of Science, St. Joseph's Degree & PG College King Koti, Hyderabad on 7<sup>th</sup> & 8<sup>th</sup> of September 2016. The Lecture Workshop was supported fully by the three National Science Academies: Indian Academy of Sciences, Bangalore, Indian National Science Academy, Delhi and The National Academy of Sciences, Allahabad, India.

#### **REGISTRATION**

The registration of the candidates to participate in the Science Academies' Lecture Workshop “**Role of Mathematical Sciences in digitalization**” was done at 9.00a.m on 07-09-2016. A total of 178 students (including 51 students from our college) and 11 faculty members from 28 colleges registered for the participation in the lecture workshop. Registration materials (workshop file, note pad, pen and ID) including a detailed schedule of the workshop were provided to the participants.



## INAUGURATION

The inaugural function of the two - day workshop took place on the first day 7<sup>th</sup> September 2016 at 9.45 am in Joseph's Hall with a prayer by Rev. Fr. Aarogyam, the Vice-Principal of the college followed by lighting the lamp. Convener of the Lecture Series Prof. V. Kannan, School of Mathematics & Statistics, HCU, Hyderabad, Dr. K. Veerbhadra Rao, Department of CSE, OU, Hyderabad, Prof. P. L. Visweswara Rao, the Director of the college, Rev. Fr. Aarogyam, Vice-Principal of the college, Deans of the college, Faculty of the Department, Faculty and students from various colleges of twin cities and five persons from different Media groups attended the Inaugural Function.



Prof. P. L. Visweswara Rao, the Director of the college in his Welcome address stressed on the importance of Science in various fields and the opportunities that are available for Science students. He appealed to young students to involve themselves in research and significantly to the society. Mrs. Kiran Jyothi, Head, Department of Computer Science briefed about St. Joseph's Degree & PG College and the milestones achieved by the college to the audience. Mrs. N. Lakshmi, Coordinator of the workshop expounded the objective of the workshop to the students.



Presiding over the function Prof. V. Kannan, School of Mathematics & Statistics, HCU, Hyderabad and the convenor of the Workshop, in his address spoke on the aims and objectives of Science Academies, the Science education programmes for teachers and students. He said that the workshop is an opportunity for the students not only to know the basics of the subject but also to develop research aptitude among them. He applauded the organizers for arranging the Workshop for the benefit of student community.



Mrs. G. Sunitha, Head, Department of Mathematics & Statistics who was also the Master of the Ceremony for Day – I Programme elaborated the theme of the workshop and the subthemes and stated that this workshop is a knowledge sharing avenue, and develops research culture in various areas of mathematical sciences. She also oriented the students about the aim, activities of the three Science Academies and also the various journals Published by the

three Science Academies. She also proposed the formal vote of thanks and introduced Prof. V. Kannan to the students before the beginning of the Academic Sessions.



### **ACADEMIC SESSION-I**

The Lecture on “Use of Topological Dynamics in three problems of Digitalization” was delivered by the Convenor of the Workshop Prof. V. Kannan. In his opening remarks he stated that Mathematics is a language of science and technology, further said everything in this world is organised and Mathematics has been one of the important reasons behind keeping everything in organised way since ancient times. He also said that the use of Mathematics in digitalization was developed hundreds of years ago by Indians in Rig-Veda (The oldest book of Man time) consisting of Poems which have Mathematical rules. He also explained how Pingala a 4<sup>th</sup> Century Indian Mathematician in his book Chandas-Sutra used Mathematics for reciting poems where he associated the number 1 for a long syllable and 0 for a short syllable thus associating a sequence of numbers to each poem hence evolving the Binary Numeral System. He quoted that Pingala’s contribution in the field of Mathematics 3000 years ago is tremendous and his vital inventions in this field include Binary numeral System, Meruprastana (Pascal’s Triangle), Binomial Theorem.



Moving onto the current topic in his lecture he discussed about the three major problems in digitalization namely Data Compression, Data storage Data security and how different branches of Mathematics especially Topological Dynamics are used to solve these three problems of Digitalization. He explained how Theory of Fractals is used to overcome the first problem namely the Data Compression and Barnsley and Hurd Algorithm using IFS method of fractal generation is used to represent complicated pictures through a relatively small set of data. He also explained how Modified Frequency Modulation method is used to encode the digital data on magnetic media to overcome the second problem namely Data Storage and how cryptography is playing a prominent role to overcome the third problem that is Data Security. The entire Session was very interesting and informative.

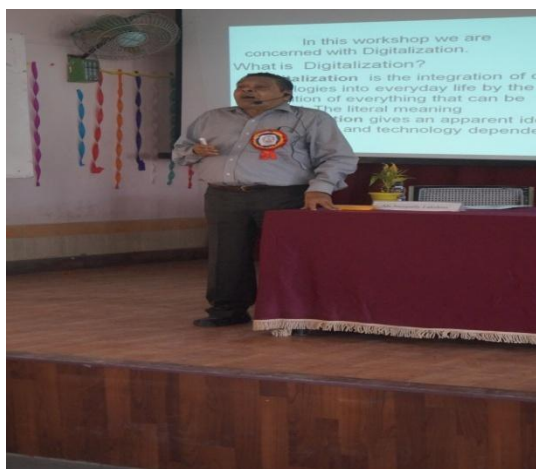
After the Lecture there was a Tea –break for 15 minutes.

## **ACADEMIC SESSION – II**

Mrs. N. Lakshmi of Department of Mathematics & Statistics introduced Dr. K. Veerbhadra Rao, Department of CSE, OU, Hyderabad to the audience. Dr. K. Veerbhadra Rao delivered a lecture on “The Importance of Statistics for Digital Communication”. In his opening remarks he explained how digitalization and digital technologies became an integral part of day to day life. In his brief lecture he explained what digitalization is, how to digitalize the information, the use of Laplace transform in signal Analysis, and the use of Z-

Transforms in digital Analysis and how statistical methods are used in digital communication.

After the lecture there was a lunch break for about 45 minutes.



### **ACADEMIC SESSION – III**

The post lunch session was dedicated to “Computational Physics and the Application of Mathematical Techniques”. Mr. Sravan Kumar from the Department of Physics and Electronics introduced the Resource Person Prof. V.S.S. Sastry, School of Physics, HCU, Hyderabad to the audience.

Prof. V.S.S. Sastry in his opening remarks stated Physics as an analytical science which is critically linked to the contemporary developments in Mathematics. In his lecture he focussed on the fascinating role of Physics, Mathematics, and Computer Science emerging to a new interdisciplinary branch as Computational Physics in taking the pursuit of our physical understanding of nature to very exciting levels. He briefly discussed the typical applications of computational physics, how it addresses a variety of theoretical problems and bridges the gap between abstract physical theory and real-world experiments and its inter-disciplinary role along with contemporary Applied Mathematics in evolving advances in Digitalization.

The participants found the lecture very interesting and an active interaction took place throughout the session. With this the first day's sessions were concluded.



## DAY-II

### ACADEMIC SESSION – IV

The second day was started with a formal prayer by the students. Mrs. L. Mihira Priya, Head, Department of Physics & Electronics invited the resource person Prof. V. V. Hara Gopal, Department of Statistics, OU , Hyderabad. Ms. S. Vijaya Laxmi from Department of Mathematics & Statistics introduced the resource person to the audience and with a brief introduction to his topic she pulled the audience into the steam.

Dr. V. V. Hara Gopal started off with the topic titled “Data Sciences its relevance and Importance”. In his opening remarks he stressed on the significance of Mathematical Sciences role in Digitalization and the major characteristics called as Data Sciences involved in it. In his lecture he explained the essential skills to be required by a Data Analyst, the role of data analysis in the growth of a company, the significance of Statistical software like Hadoop and R in Big Data Analytics. He analyzed the transition behavior of volatility in the stock price indices of selected countries with the help of a case study “A Study on Financial Time Series during Subprime Crisis” on September 2008 US Subprime crisis.

After the Lecture there was a Tea –break for 15 minutes



### **ACADEMIC SESSION – V**

The second lecture on day-II was on “Satellite Remote Sensing, Applications”. Mr. D. Srinivas Reddy of Department of Mathematics & Statistics introduced to the students the resource person Padmasri Award recipient Prof. Durga Prasad Rao, NRSA, Hyderabad.

Prof. Durga Prasad Rao in his opening remarks stated that Satellite Remote Sensing is playing a key role in our daily life and can be used in different applications. In his lecture he explained to students how the Science of Geoinformatics is developed and used to address the problems of geosciences and related branches of engineering combining geospatial analysis and modeling, developing of geospatial data bases, information system design. He also explained the utility of satellite remote sensors as major sources of consistent, continuous data for atmospheric, ocean, and land studies at a variety of spatial and temporal scales using a variety of satellite images.

He also briefed about the Geographical Information Systems (GIS), Global Positioning System (GPS) and Remote sensing (RS).

After the lecture there was a lunch break for about 45 minutes.

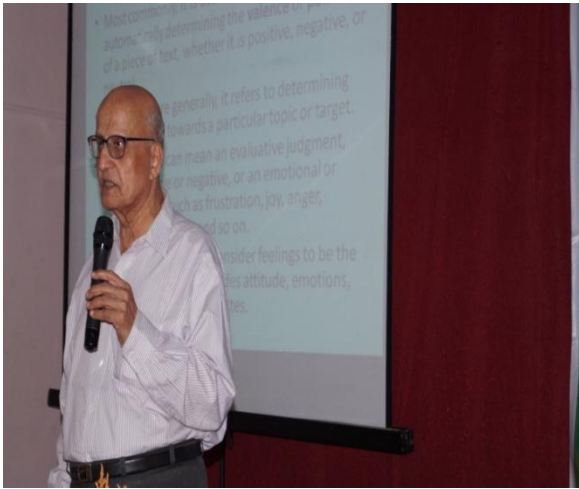




## ACADEMIC SESSION – VI

“Sentiment Analysis / Opinion Mining” was the lecture after post lunch session. Mr. M. L .N. Rao of Department of Physics & Electronics introduced the Resource Person Prof. B. L. Deekshatulu, IDRBT, Hyderabad to the students. Prof. B. L. Deekshatulu in his opening remarks stated that Sentiment Analysis is extremely useful in social media monitoring as it allows gaining an overview of the wider public opinion behind certain topics. He stressed on the applications of sentiment analysis which are broad and powerful. He explained to students the significant role played by Opinion Mining in strengthening digital marketing and how online marketing is getting affected by reviews and opinions of other buyers. He also explained in brief to students how Sentiment Analysis is used to study the News impact on stock price return, Stock Market prediction, Forex Rate Prediction, Churn Prediction, Customer Satisfaction Measurement, Box-office prediction.

The lunch and tea breaks were used by the participants to interact with the speakers personally and clarify their doubts.



## VALEDICTORY SESSION

The two day Workshop on “**Role of Mathematical Sciences in digitalization**” concluded on 8th September, 2016. Prof. B. L. Deekshatulu, Prof. Durga Prasad Rao, Principal Rev. Fr. Vincent Arokiadas graced dais in the valedictory function.



Speaking on the occasion Rev. Fr. Vincent Arokiadas, the Principal of the College appreciated activities of the two days of workshop. He also stated hard work is the only reason behind achievements of all the scientists in their

respective fields. He added students must have a proper goal in their life and must also develop research aptitude among them. He expressed his sincere gratitude to all the resource persons for delivering such wonderful lectures. He also felt that these lectures definitely would widen the horizons of domain knowledge of science students. He also took an informal feedback from students. . Several students came forward and expressed their opinions.

To mention few of them:

- Understood the various applications of Mathematical Sciences
- They felt that the titles of the lectures were apt and could get the insight of many things in the area
- Many students requested to organise more such events and provide opportunities to participate.
- Felt happy to learn the real applications of Mathematical Sciences which could not be taught in class rooms.
- All the lectures were informative and useful.



Mrs. N. Lakshmi, the coordinator of the lecture series presented a brief report of the deliberations of the two day lecture series and proposed the formal vote of thanks. The program ended with National Anthem.

The event was covered in two of leading news papers Eenadu, Hans India.



## REGISTRATION DETAILS

St. JOSEPH'S DEGREE & PG COLLEGE				
DEPARTMENT OF SCIENCE				
SCIENCE ACADEMIES LECTURE SERIES ON ROLE OF MATHEMATICAL SCIENCES IN DIGITALIZATION				
DETAILS OF PARTICIPANTS				
S. No	Name Of The College	No of students	No.of Faculty Attended	Total No. of participants Attended
1	St.Joseph's Degree & PG College, King Koti, Hyd	51		51
2	Badruka Degree College, Kacheguda, Hyd	2		2
3	Avanthi Degree College, Narayanaguda, Hyd	5		5
4	St.Anns Degree College, Mehdipatnam,Hyd	1		1
5	Megha Degree College, Ramanthapur, Hyd	5		5
6	Jagruti Degree College, Ramkoti, Hyd	6		6
7	University College of Science,Saifabad, Hyd	4		4
8	G.Pulla Reddy Degree College, Mehdipatnam, Hyd	6		6
9	Anwar Ul-Uloom Degree College, Nampally, Hyd	5	3	8
10	O.U.C.W,Koti, Hyd	4		4
11	S.N Vanita Maha Vidyalaya, Nampally, Hyd	5	2	7
12	Aurora's Degree & PG College, Chikkadpally, Hyd	11	1	12
13	KMIT, Narayanguda, Hyd	5	1	6
14	Sardar Patel Degree College, Padmarao nagar, Hyd	5		5
15	Bhavan's New Science College, Ramkote,Hyd	4		4
16	RBVRRW College, YMCA, Hyd	8	2	10
17	Nizam College, Abids, Hyd	2		4
18	A.V College of Arts, Science & Commerce, Gaganmahal, Hyd	10		10
19	Kasturba Gandhi Women's Degree College, Sec-bad	7	1	8
20	G.D.C, Khairatabad, Hyd	5		5
21	St.Mary's Degree & PG College, Yousufguda,Hyd	5		5
22	Pragathi Maha Vidyalaya, Koti, Hyd	5		5
23	Vanitha Mahavidyalaya,Nampally, Hyd	5		1
24	Little Flower Degree College, Ramanthapur, Hyd	5		5
25	City College,Nayapool, Hyd	2	1	3
26	Shadan Degree College, Khairatabad, Hyd	1		1
27	Railway Degree College, Tarnaka, Hyd	5		5
28	St.Joseph's Degree & PG College, Tolichowki, Hyd	1		1
Total number of participants			189	

# Photo Gallery





