DEPARTMENT OF MATHEMATICS

2019 - 2020

TWO DAYS HAND-ON WORKSHOP ON R PROGRAMMING AND STATISTICAL DATA ANALYSIS

The Department of Mathematics organised two days hands-on workshop on R programming and Statistical Data Analysis for I and II year M Sc students and M Phil students on 1st and 2nd August 2019. Dr. M. Ramakrishnan, Assistant Professor, RKM Vivekananda College, Mylapore was the resource person for the workshop. 80 students and 12 staff participated in the workshop. The venue was Computer lab in the ground floor of Ganga Block. The students were very thrilled to learn the working of R Programming and were excited to see the outputs. The resource person enthralled the students by his teaching and all the students actively participated and made the session very interactive. The students have learnt to find the solutions of various transportation and assignment problems using R Programming.

INAUGURATION OF THE STUDENTS MATHEMATICS CLUB-MATHSOPHORIA

Mathsophoria - the Students Mathematics Club of the Department of Mathematics, D G Vaishnav College has been functioning for quiet some years with the following objectives: to inculcate planning and organizational skills, promote team work, to bring out the inherent mathematical skills in the students and to enhance interest and enthusiasm in learning Mathematics. For the academic year 2019- 2020, the activities of the association was inaugurated on October 3rd, 2019 by Dr K G Subramanian, Honorary visiting professor, Faculty of Science, Liverpool Hope University, UK. The venue was Dwaraka Auditorium. 450 students and 28 staff participated in the inauguration programme.

In his address the Principal emphazised the fact that student participation in the activities of the club would expand their knowledge horizon. Prof Narayanan spoke on the importance of

functioning of the club . He pointed out the application of Maths in astronomy and stated some facts on the big bang theory and the recent development of an algorithm which resulted in getting an image of black hole.

The nominated student representatives of the club are

President   Ms. Abhinaya G Nambiar IIM.Sc

Vice President   Mr.Naveen Prakash. M   I M.Sc

General Secretary

Ms.Snehaa. S   III B.Sc (MPC)

Mr. Selvabharathy. T   III B.Sc (MAN)

Mr.Keerthivasan. S   III B.Sc (MCA)

Dr K G Subramanian who has a vast teaching experience and research collaboration across the world, especially in Mathematical aspects in Computer Science, gave a talk on "Certain sequence Patterns in Mathematics". He illustrated different ways of generating a particular sequence given its first three terms and how generalizing its terms may turn out to yield ambiguous results. He insisted on the precision in stating facts mathematically. The outcome of the event was to develop the leadership quality of students and enhance the organizing skills of the students

Series of Webinars Organized By

Post Graduate and Research Department of Mathematics D.G. Vaishnav College, Arumbakkam, Chennai-600106.

2020 – 2021

List of Events for the month of JULY

1. On 11th July 2020 Post Graduate and Research Department of Mathematics D.G. Vaishnav College conducted National Webinar on Application of Number Theory in Cryptography by Dr. P. Vanchinathan Professor, VIT, Chennai. He spoke about encryption of data used in ancient times and about how the secrets were maintained during the war times. He also demonstrated application of computer language Python in cryptography. 432 participants registered for this webinar.

2. Guest Lecture was organized on 18th July 2020 and the lecture was about Petrinets – Fundamental Models and its Application by Dr. P. USHA, Assistant Professor, Department of Mathematics D.G. Vaishnav College. She explained about different models of Petrinet and its applications. Second, Third year UG students and Second year PG students participated.

3. National Webinar on Decimal expansion, Gauss Conjecture & Borel Function was presented by Dr. R. Thanga Durai Professor, Health Chandra Research Institute, Allahabad, India on 25th July 2020 there were 321 faculty participants, 53 research Scholar and 174 student's participation. Defined cantor Set and how any real number is given decimal expansion and explained about Gauss Conjecture and Borel Function.

List of Events for the month of AUGUST

1. National webinar on Some problems of Global Analysis was conducted on 01/08/2020 presented by Dr. T. Venkatesh, Director, Mathematical Science Institute Belgavi, Karnataka with 252 faculties, 45 Resource Persons and 102 students Participated were benefited from his lecture he how all physical phenomena can be framed as a mathematical equation and solved.

2. International webinar on Application of Linear programming in Performance Measurement presented by Dr. K. A. Venkatesh, Adjunct Professor IIIT Bangalore, Professor of Mathematics and computer Science Myanmar Institute of Information Technology, Mandalay Myanmar on 8th August 2020 there were about 189 faculty members 22 research scholars and 77 students participated. A mathematical model has certain assumption and limitation he explained how frontier Analysis is used to arrive Performance and how efficiency can be arrived using efficient frontier and Data envelopment analysis. Application of LPP in Performance Measurement Geometry, LPP, How to Solve LPP using Excel. How to model the performance measurement as an LPP.

3. A three- day workshop on Geogebra: A teaching tool was organized from 12th -14th August 2020 presented by Dr. S. Ganesh Mathematics teacher, PUM School, Kilariyum, Thiruvarur district. NCERT E- Resource development team member National ICT curriculum team member Diksha contact center with 587 faculty members 40 research scholar and 386 students participated. He demonstrated and explained how a graph could be drawn using this software and how could it be useful for teachers to explain for students.

4. A three- day workshop was conducted from 17th to 19th August by PG and Research Department of Mathematics DG Vaishnav College on L^2 Learning Latex presented by Dr. S. Siva Subramanian Professor of Mathematics, Head of the Department Science and Humanities Anna University College of Engineering, Tindivanam. He demonstrated Latex programming and explained the commands used in various typesetting which will be useful while paper presenting. There were 231 faculty, 46 Research Persons and 373 students participants for this program.

5. Guest Lecture on Base 12 was presented by Lt. G. SomaSundara Ori Assistant professor, Department of Mathematics D.G. Vaishnav College on 20th August in his presentation how every number can be represented in base 12 as we represent every number in base 2(binary) and base 10 and he also explained the various application of these numbers. In this lecture UG II and III year students and PG II student's participated and this lecture kindled the mind of young students using different approach.
National webinar on Role of fuzzy Analysis was on 27th August 2020 by Dr. K. Arjunan Assistant Professor, Alagappa Government Arts College, Karaikudi there were 83 faculty participants,10 Research Scholar and 148 students Participants for this webinar. This webinar was about the application of fuzzy and its analysis.

6. National Webinar on The axiom of choice and some of its consequences on 28th August 2020 by Dr. Alladi Sriram, Assistant Professor, A.M. Jain College, Chennai. There were 78 faculty participants, 12 research participants and 153 students participated in this program. Which was about axiom of choice and its applications.

7. National Webinar on the function of bounded Variation by Dr. M. Marudai, Honorary Professor Department of Mathematics, Bharathidasan University, Trichy on 29th August 2020 there were 92 faculty paritipants,14 Research scholars and 168 Students in this webinar and gained knowledge about functions of Bounded Variation he introduced and solved sequences and series with different techniques.

List of Events for the month of SEPTEMBER

1. National Webinar on mathematical modelling of Infectious Disease by Dr. D.K. Yadav, Assistant Professor, Department of Mathematics and Demography, National Institute of Health and Family welfare Munirca, Noida on 12th Sep 2020 in which 107 faculties, 32 research Scholars and 69 students participated.

2. National Webinar by Dr. S. Francis Raj Assistant Professor, Department of Mathematics, Ramanujan School of Mathematical Sciences, Pondicherry University presented about Coloring Game of graphs on 19th Sep 2020 which had about 49 faculty participants, 11 research scholar and 258 students. His lecture was about how graphs can be colored with certain constraints.

List of Events for the month of OCTOBER

1. A two-day National Webinar on Introduction to Digital Topology presented by Dr. P.T. Ramachandran retired professor of Mathematics, University of Calicut. Organized on 2 & 3 October 2020 with 80 faculty participants 13 research scholar and 279 student's participation.

This webinar provided a wonderful chance for participants to understand topological concepts like connectedness, simple connectedness and how they were used in computer graphics and digital image processing. The speaker explained about how picture component can be separated and used in digital image processing, document reading, Radiology, Hematology, Tomography, Geology, Land use management, counting and labelling, border tracking Contour filling the thinning etc. He also demonstrated these concepts with suitable examples.

2. National Webinar on Mathematics of Fractals on 10th October, 2020 presented by Dr. S. Minirani, Associate Professor in Mathematics, Department of Basic Science and Humanities, MPSTME, NMIMS, Deemed to be University, Mumbai. The webinar was attended by 34 faculty participants 5 research scholars and 165 students.

The talk began with explaining fractals, where do we use fractals and how Euclidean geometry is used to define fractals. The difference between Idealized and non-Idealized seen in nature were explained. The concepts of continuous but not differentiable anywhere functions were discussed. The history of fractals and how the father of fractals Benoit Mandelbrot pondered at the equation and suddenly visualized the graph using complex numbers were discussed in detail. Application of fractals in various fields were explained.

3. Webinar on construction of Topology from basis and sub basis on 24th October, 2020 presented by Dr. J. Sakthivel Retired prof and head of department of Mathematics Vivekananda

college, Agatheeswaram Kanyakumari, Tamilnadu. Number of participants for this webinar was 40 faculty, 10 research scholar and 167 students. Started his lecture by defining Metric space and opensets properties of open sets and he introduced Topology and he completely covered about basis and sub basis and he also said about books. Which are very useful to have a wider knowledge about topology.

4. National webinar on General Measure and integration on 31st oct 2020 presented by Dr. C. Elango. Associate Professor, Research Department of Mathematical Sciences. Cardamon Planters Association College Theni District. Introduced about Integration application using measure of profit and loss and Riemann Integration. He stated about difference between differentiation and Integration.

He introduced about real numbers R, Sets, Sequence and Function. He also introduced Lebesque Measurable Sets – non Measurable Sets. Lebesque Measurable functionand Lebesque Integration. Differentiation and Integration general measures space X- construction Caratheodory Methods. Introduction over general measures was his point of discussion and said about difference between Riemann Integration, Lebesgue Integration and general Integration. This webinar was attended by 62 faculty members, 14 research scholars and 148 students.

POST GRADUATE AND RESEARCH DEPARTMENT OF MATHEMATICS conducted National Conference on Mathematical Modelling with differential equations (Online) from 14 - 17 October, 2020.

The conference was attended by 265 Faculty members, 122 Research Scholars and 156 students.

The Secretary of D.G. Vaishnav College, Shri. Ashok Kumar Mundra welcomed participants for this conference. Principal Capt. Dr. S. Santosh Baboo felicitated participants. Convener & Head of the department of mathematics, Professor R. Venkataramanan explained about the importance of this conference and the scope of the Mathematical modelling.

The first Invited talk was delivered by Dr. P.G. Siddheshwer, Senior Professor Department of Mathematics CHRIST (Demeed to be University) Bengaluru on Better Mathematical Modelling by understanding Differential Equation. He elaborately explained the application of mathematical modelling using differential equations,

Session II of day one was an invited talk by Dr. A.S. Vasudeva Murthy, Professor, Department of Mathematics TIFR, CAM Bangalore on the topic "On The String Equations of Narasimha".

Session III of day I was a talk on Mathematical models of ODE in Bioscience by Dr. Deepak Kumar, Professor, Department of Mathematics, Faculty of Engineering and Technology. Manav Rachna International Institute of Research & Studies, Faridabad. He introduced and explained how ODE in mathematical models used in Bioscience and its application how model can be formed and how it is useful in real life.

Session IV of day I was a talk by Higher order fitted Operator Numerica Scheme for Singularly perturbed delay Differential Equation by Dr. S. Dinesh Kumar, Department of Mathematics School of Advanced Science, VIT Vellore. Introduced what is perturbed and kind of differential equation with singularly perturbed delay.

Day 2

Invited talk of session I for day 2 was delivered by Professor Manju Agarwal , Department of Mathematics, University of Lucknow, U.P on the topic Modelling the effect of industrial development on the depletion of forestry resources affecting wildlife species. She introduced the models and how to find the effect of industrial development on wildlife species.

Session II of Day 2 was on A Domain decomposition HPM for solving class of singular boundary value problem by Dr. Ujwal Warbhe, Assistant professor Department of Mathematics NIT Srinagar. A new efficient recursive numerical scheme for solving a class of singular two point boundary value problem was explained which is based on homotopy perturbation Method.

Session III of Day 2 was presented by Dr. S. Minirani, Associate professor in Mathematics, Department of Basic Science and Humanities, MPSTME, NMIMS Deemed to be university, Mumbai. Her Topics of talk was on Infectious disease Modelling in which she explained the method to model the infecting disease and how to calculate the infectious disease effect and how far these effect remains and also about the latest infectious disease Covid 19 and various available methods.

Session IV of Day 2 was a paper presentation.

Session 1 of Day 3 was by Dr. Balasubramanian Professor & Head Department of Mathematics, Director international programme, Former Registrar, Gandhigram rural institute Deemed to be University gave his lecture about "Fractional differential equation and its application". Fractional differential equation is a branch of mathematical analysis which deal with differential equation which are not necessarily integers and he mentioned about book that are useful to study further.

Session 2 of Day 3 was about "Mathematical modelling a boon for optimal decision" presented by Dr. Vijaya Kumar Professor, Department of Mathematics, Faculty of Engineering and Technology. Manav Rachna International Institute of Research & Studies, Faridabad. He introduced and discussed how modelling can be applied in real life situation when we are unable to decide with optimal condition. What are the various method which give more reasons to decide and make decision.

Session 3 of Day 3 was about An introduction to Epidemic modelling: spread and control of infectious disease by Dr. Pragya Mishra Assistant professor Department of Mathematics. PT. DEEN DAYAL Upadhyay Govt. Girls PG colleges Rajaji Puram, Lucknow. Lectured about the various methods in modelling to calculate the effect of epidemic disease and how to control these diseases.

Session IV of Day 3 was a paper presentation: Four participants presented out of six.

Day 4 there were three paper presentation session and validectory address by Dr. M. Shankar, Professor, Department of Mathematics, School of engineering, Presidency University, Bangalore.

6. C^4 – Chase, Conquer, Crack CSIR- NET Aspirants is a free online coaching class for net aspirants of mathematics stream. Principal Capt.Dr.S.Santosh Baboo D.G. Vaishnav College,

Arumbakkam inaugurated this series of online class for NET Aspirants. The programme is a series of class conducted every week Saturday 6.00 pm to 8.00 pm and Sunday 11.00 am to 1.00 pm for the benefits of NET Aspirants. More than 500 participants registered for this programme. At present 9 sessions has been conducted.