



DWARAKA DOSS GOVERDHAN DOSS VAISHNAV COLLEGE (AUTONOMOUS)

COLLEGE WITH POTENTIAL FOR EXCELLENCE LINGUISTIC MINORITY INSTITUTION

MATHPHILE - NEWSLETTER

POST GRADUATE AND RESEARCH DEPARTMENT OF MATHEMATICS



ANNUAL ISSUE





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Post Graduate and Research Department of Mathematics

Dwaraka Doss Goverdhan Doss Vaishnav College(Autonomous)

College with Potential for Excellence

Linguistic Minority Institution

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"The only way to learn Mathematics is to do Mathematics."

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Take up one idea, Make that one idea your life
Think of it, Dream of it, Live on that idea
-Swami Vivekananda



SECRETARY'S MESSAGE

All Our dreams can come true, if we have the courage to pursue them"- Walt Disney

Dreams may seem to be far removed from reality. They may seem impossible and improbable. But little do we realize that all of us have in us the strength, patience and the passion to fulfil our dreams. The vision and dreams of a few kind hearted philanthropists and educationists, led to the founding of this institution. The hard work and perseverance of the successive members of the management and the academicians have enabled the institution emerge as one of the much sought after colleges in the city. It is now our duty and responsibility to carry forward this dream and with steadfast faith and determination redefine the standard of excellence, strengthen the spirit of solidarity and celebrate the power of knowledge to transform the society.

Best wishes

Shri Ashok Kumar Mundra

SECRETARY

PRINCIPAL'S MESSAGE



Greetings!

The meaning of education has transformed greatly in todays technology driven and digitally connected world that we live in, An educator in the present times has to adopt a multi-dimensional approach having knowledge creation, confidence building and honing leadership skills at its core. While many of our students have been greatly contributing to various renowned and reputed organisations as exemplar leaders, the institution and the department also focuses on developing entrepreneurship skills among students so that they would have the courage and conviction to establish an enterprise and create a legacy. The task ahead is clearly defined-educate, enlighten and empower. As Benjamin Franklin said "An investment in Knowledge pays the best interest".

With Best Wishes

Dr S. Santhosh Baboo

PRINCIPAL

Head of the Department Message



Greetings!

The Department of Mathematics has recorded consistent improvement in its academic, research and placement performance. It offers a range of innovatively designed programs whose curricula are constantly updated to develop a deep understanding and enjoyment of Mathematics, to carry out original research, to become effective teachers and communicators and to prepare themselves for their future careers. In their curriculum, they are invigorated to take up projects and internship to supplement theoretical knowledge with practical experience.

I congratulate the Editorial Board of this Newsletter who have played wonderful role in accomplishing the task in record time. Also my heartfelt congratulations to staff members and students for their fruitful effort.

With Best Wishes

Prof. R. Venkataramanan Associate Professor & Head Post Graduate and Research Department

ABOUTTHE COLLEGE

Dwaraka Doss Goverdhan Doss College, a Vaishnav linguistic minority institution established in the year 1964 with B.Sc Mathematics as first course. College was founded on the principles of Vaishnavism, with the sole purpose of imparting value education quality empowering the youth. The college has seen a phenomenal growth in terms of its infrastructure and revamped curriculum to cater to the specific needs of the students Outstanding community. performance of the students in academics and extension activities has enabled the college to emerge one of the premier institutions of higher learning.

ABOUT THE DEPARTMENT

In the year of its inception, the college under the stewardship and the Principal of Shri T.Totadri Iyengar, offered an Undergraduate course in Mathematics along with Pre - University courses. The University of Madras upgraded the department to the postgraduate status in the year 1980. M.Phil course was started in the year 2001. The Post Graduate and Research Department of Mathematics, DG Vaishnav College, Chennai has been vigorously engaged in both research and teaching. The Department has energetic and dedicated faculty members who actively involve in research areas like Complex Analysis, Number theory, Mathematical Analysis, Fuzzy sets, Fuzzy Optimization, Petri nets, Information Security, Differential equations, Wavelets and Numerical Methods.

DEPARTMENT VISION

The vision of the department is to promote and support a comprehensive, innovative and dynamic learning environment to assist students in acquiring a conceptual understanding of the nature and structure of Mathematics, its processes and applications.

Mission To establish an atmosphere of creative endeavour that supports interdisciplinary collaborations, innovative projects, significant research and informal discussions that mutually benefit students, faculty and the community at large.

Conferences

The aim of conducting conference is to provide an excellent international forum for academicians, researchers and research scholars to exchange and share their experences and research results about all aspects of Mathematics. In this regard two national conference was organized by the post graduate and research department of mathematics.

• The first National conference was conducted by the Department on the topic "Contemporary Mathematics and Applications" from 20th October to 23rd October 2021 in the hybrid mode. The theme of the conference embraces Mathematical Modelling, Fuzzy sets, Theoretical computer science, Soft computing and Number theory and Cryptography. Conference includes contributions from the invited speakers and paper presentation sessions by the delegates.





The Inaugural address of the conference was given by the Chief Guest Dr. G. Viswanathan, Founder & Chancellor, VIT University, President- Education Promotion society for India, New Delhi. In his inaugural address, he lauded the Management, Principal, head of the department and the faculty members of the department for hosting a national conference. He wished the college to become a University in the near future.

The keynote address was given by **Dr. K. A. Venkatesh**, Adjunct Professor, IIIT B, Professor of Mathematics and Computer Science, Myanmar Institute of Information Technology, Mandalay, Myanmar. He insisted the importance of interdisciplinary and multidisciplinary research and he introduced and explained Digital twins.

The inauguration function was ended with vote of thanks by **Prof. M. Devika**, Deputy Head, Associate Professor, PG and Research Department of Mathematics.









The inauguration was soon followed by the technical session. Twenty eminent key resource persons from IIT, IMS, NIT, IIT-T Design and Manufacturing, IIIT-B from universities acroos India and various industries, interacted with the participants on this occasion. The conference was conducted in the hybrid mode in Vallabhacharya auditorim and using zoom platform. More than 56 faculties registered for this National conference. We had four paper presentation session on Day 2 and Day 3. We received 30 papers and 27 participants have presented the papers.

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On day 2 the paper presentation session was chaired by Dr.R. Sivaraman, Associate professor, PG and Research department of Mathematics, Dr. S. Hariharan, Assistant Professor, PG and research department of Mathematics.

On day 3 the paper presentation session was chaired by Dr. K.A. Venkatesh, Adjunct professor, IIIT-B, Professor of Mathematics and Computer Science, Myanmar Institute of Information Technology, Mandalay, Myanmar and Dr. Anantha Narayanan, Associate Professor, A.M. Jain college, Chennai.

Most of the papers presented in the conference met with the theme of the conference and were of good quality. The presented papers will be reviewed by the review board and the suggested papers will be forwarded for publication.

Having listened to 20 technical session of the four days National conference on "Contemporary Mathematics and Applications -2021" the curtain had come to the end of the conference with the Valedictory function on 23rd October 2021 at 4:30 pm with the welcome address given by **Dr. Jayanth karthik**, Associate Professor, PG and research Department of Mathematics, followed by the principal address given by **Dr. S. Santhosh Baboo**. Introduction to the chief guest was given by **Prof. Sangeetha**, Head incharge, Department of Mathematics with Computer Applications followed by the Valedictory address given by **Dr. G.R. Sinha**, Professor at Myanmar Institute of Information Technology, Mandalay, Myanmar, Adjunct Professor, International Institute of Information Technology, Bangalore. In his address he focused on research and added this type of conference will improve the teaching learning process. Many positive feedback was shared by the offline and online participants.

Vote of thanks was given by **Dr. S. Sundarabalan**, Head, Department of Statistics, Dwaraka Doss Goverdhan Doss Vaishnav College. The valedictory function ended with National anthem. The group photo was taken at the end which added to our memories.



Workshops

To allow the students to learn new math content, and to practice math strategies in a variety of ways workshops were organized by the Post Graduate and research Department of Mathematics. In this connection two workshops were conducted.

Post Graduate and Research Department of Mathematics, DG Vaishnav College, Organized a three day workshop on "Open board, Smart Notebook and Microsoft Math from 14th June 2021 to 16th June 2021 to enhance the virtual teaching and interactive lessons. https://sagecell.sagemath.org



On 14th June 2021 Mr. Ganesh, Graduate teacher in Mathematics, PUM school, Thiruvarur District, enlightened about the Open Board Techniques. open board is an open source cross-platform teaching software for interactive whiteboard designed primarily for use in schools and universities. He demonstrated and explained the techniques used in Open Board.

On the second day Mrs. S. Bhagavathy, Graduate teacher in Mathematics, S.M. Govt HR. Sec. School, Thiruchendur, Thoothikudi District, explicated about the SMART notebook techniques. She explained that in SMART Notebook software, we can create notebook files that include graphics, text, tables, lines, shapes, animations and more.

On the third day Mrs. Vallikumari, Graduate teacher in Mathematics, Govt. Hr. Sec. School, Alangulam, Thenkasi District, explained about the Microsoft Math Techniques. She also explained how to Present our file and keep our class's attention as we move and interact with the objects. She also gave the visualization of the 2D and 3 D objects.

More than 100 delegates from various state across the country were participated. They expressed their gratitude to organizers for organizing this workshop.





A two days National level workshop on Sage Math for Calculus was organized by the Post Graduate and Research Department of Mathematics on 5th and 6th August 2021 to explore and experiment with mathematical constructions in calculus using a Sagemath software.



```
21]: M solve(m==diff(f(x)).substitute(x=a),a)

st[121]: [a == -\frac{1}{2}*sqrt(5) + 2, a == I*sqrt(5) + 2]

22]: M # Higher order differentiation
    # find the first five derivative of cosx
    ([diff(cos(x),x,i) for i in [1..5]])

st[122]: [-sin(x), -cos(x), sin(x), cos(x), -sin(x)]
```

The resource person **Dr. P.A. Venkatesh**, Adjunct Professor, IIIT-B, India, Professor of Mathematics & Computer Science, Myanmar Institute of Information Technology, Mandalay, Myanmar gave a vibrant presentation about the introduction of sagemath and the application of sagemath in Differential and Integral calculus.

More than 100 participants have registered for this workshop.

Youtube link: https://www.youtube.com/watch?v=ZYLERlqoL9g

FACULTY DEVELOPMENT PROGRAMME

The quality of education depends on the competencies of the faculty. In view of the faculty's vital role in influencing education outcomes the department conducted two Faculty development programme . The Faculty development program is a critical factor towards building the strong foundation of an educational system to ensure quality education.

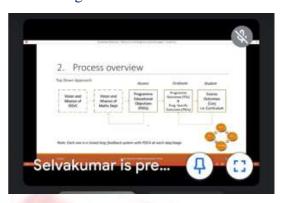
• Three days Faculty Development Programme on "Effective Course Design for Mathematics"

Three days Faculty Development Programme on "Effective Course Design for Mathematics" was organized by the Post graduate and Research Department of Mathematics from 22nd July 2021 to 24th July 2021. Dr. Selvakumar Kandasamy founder and CEO of Viveka Sadhana Learning Management system was the Resource person.



Day 1: The resource person gave the introduction about the outcomes-based education and presented a detailed explanation about how to design a course outcomes.





Day 2: The resource person discussed about the Best practices in course plan, assessment plan, Design of higher order question and how to frame Course outcome in a single statement. Queries raised by the faculty was answered visibly by the resource person and the assessment was conducted

Day 3: Resource person deliberated the Active learning strategies, students performance measurement and the calculation of CO and PO attainment.

It was an Interactive session many queries from the participants were discussed. Activities are provided for the participants to practice and measure their learning during the workshop.

MARGAZHI MAHA UTSAV

As a part of Department activities, department reached yet another milestone of celebrating the Margazhi Maha Utsav from 3rd January to 8th January 2022 in the online mode.





Margazhi month is considered as divine month not only for humans and also devas. Lord Krishna said in Bhagavad Gita said that he is the **Margazhi** in among 12 months which considered as the great thing and making this month more divine. Lord andal (only women alvar among twelve alvar) composed pasurams(30 songs)or 30 on the month of margazhi. She penance herself and made pavai nombu to get married Lord Vishnu.

In this connection, Post graduate and Research Department of Mathematics, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai Organized one week celebration of Margazhi maha utsav "Alzhwargal Amudhu -a week program - to gain the spiritual knowledge. Eminent speaker/Upanyasakar gave discourse on Azhwars in a more comprehensible way. This programme witnessed a resounding success as Many participants gave a valuable feedback.









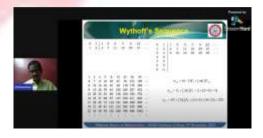
Webinars

The Department took a major role in the conduct of Webinars on Pure and Applied mathematics to give the students an in depth exposure to Mathematics. In this regard 17 webinars were conducted by the department with eminent resource person.



National Webinar on "Surprising Sequences" was conducted on 6th December 2021 by the Resource person Dr. R. Sivaraman, Associate Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. He gave the talk about the different sequences and explained them in detail. Students and research scholars are very much benefited.







National Webinar on "Some Applications of Graph theory" was conducted on 7th December 2021 by the Resource person Dr. N. Jayanth Karthik, Associate Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. He explained about the different applications of Graph theory.





➤ National Webinar on "Fuzzy sets and their Applications" was conducted on 8th December 2021 by the Resource person Dr. B. Abirami, Associate Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. She explained about the different applications of Fuzzy sets.



National Webinar on "Introduction to Geometric Function Theory" was conducted on 9th December 2021 by the Resource person Dr. S.P. Vijayalakshmi, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. She gave the introduction and explained some of the applications of univalent functions in detail.



National Webinar on "Mathematical Transforms" was conducted on 10th December 2021 by the Resource person Dr. S. Hariharan, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. He gave the applications of Laplace Transforms, Fourier series and Fourier transforms.



National Webinar on "Tree Token Petri nets" was conducted on 10th December 2021 by the Resource person Dr. P.Usha, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. She explained about the petri nets model and explained about the tree token petri nets in detail.



National Webinar on "Some applications of fixed point theory" was conducted on 13th December 2021 by the Resource person Mr. P. Thirumal, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. He gave the talk about the applications in fixed point theory.



National Webinar on "Variant Graph coloring and their applications" was conducted on 14th December 2021 by the Resource person Dr. R. Arundhadhi, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. She explained the variant graph coloring with examples.



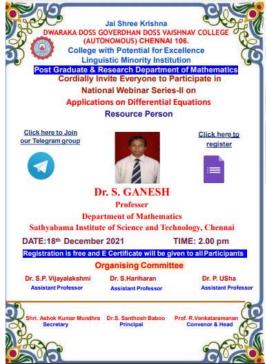
National Webinar on "An Introduction to Octagonal Fuzzy numbers" was conducted on 15th December 2021 by the Resource person Dr. S.U. Malini, Assistant Professor, Department of Mathematics, DDGD Vaishnav College, Chennai. She explained the octagonal Fuzzy numbers with various examples.



National Webinar on "An Introduction to Petri Nets" was conducted on 16th December 2021 by the Resource person Dr. K. Thirusangu, Associate Professor, Dean of Research, Department of Mathematics, S.I.V.E.T, Chennai. He explained about the concept of Petri Nets with various examples and applications.



National Webinar on "An Introduction to Cryptography" was conducted on 17th December 2021 by the Resource person Dr. Vengatakrishnan Kuppusamy, Associate Professor, Department of Mathematics and Computer Science, Sri Sathya sai Institute of Higher learning, Muddenahalli, Bengaluru.. He gave introduction about Cryptography and explained the concepts in detail.



National Webinar on "Application of Differential Equations" was conducted on 18th December 2021 by the Resource person Dr. S. Ganesh, Professor, Department of Mathematics, Sathyabama Institute of Science and Technology, Chennai. He explained the various applications of Differential Equations in detail.



National Webinar on "Applications of Fuzzy models in the analysis of covid 19 was conducted on 20th December 2021 by the Resource person Dr. Arthur Rajkumar , Associate Professor Hindustan Institute of Technology and Science(HITS). He explained how the fuzzy models are used in the analysis of Covid 19.



National Webinar on "Graceful Labeling and its Variants — a Brief Introduction" was conducted on 21st December 2021 by the Resource person, Dr. S. Manikandan, Assistant Professor, Department of Mathematics, RV Govt. Arts College, Chengalpattu. He gave a brief introduction about Graceful labeling and its variants with many examples.



National Webinar on "Optimization Using R" was conducted on 23rd December 2021 by the Resource person, Dr. V. Parthiban, Assistant Professor, Mathematics Division, School of Advanced Sciences, Vellore Institute of Technology, Chennai. He explained about the concepts of optimization using R software.



National Webinar on "A Journey on Entire Meromorphic Functions" on 24th December 2021 by the Resource person, Dr. Naveenkumar S.H, Assistant Professor, Department of Mathematics, Presidency University, Bengaluru. He gave a clear explanation on Entire meromorphic functions

STUDENTS ACTIVITIES -BRAHMAGANITH

National Mathematics Day December 2021



As a part of Brahmaganith, Mathematics club of DDGD Vaishnav college, Post Graduate and Research Department of Mathematics, Dwaraka Doss Goverdhan Doss Vaishnav College, Chennai, Organized a National Mathematics day commemorating Sri. Srinivasa Ramanujan's

134th Birth anniversary. The Mathematics day was celebrated with objective of creating awareness among students about the importance and applications of Mathematics in day to day life and also to kindle students interest in studying the higher Mathematics. The event took place in Vallabacharya Auditorium in hybrid mode

The Mathematics Day started with invocation song and formally inaugurated by the lighting of the Kuthuvilaku followed by the welcome address given by student coordinator Mr. Keerthivasan (II M.Sc).

The inaugural address was given by the convener, **Dr. S. Hariharan**, Assistant Professor, Department of Mathematics, DDGD Vaishnav college.

Dr. Santhosh Baboo, Principal, Convenor & Member - Syndicate, University of Madras. delivered the presidential address. In his address he congratulated the students for organizing the events and insisted the importance of Mathematics.

The chief guest of the day **Dr.Sanjit Das**, Assistant Professor, School of Advanced Sciences, VIT Chennai graced the occasion . He lauded the department Mathematics club Brahmaganith and insisted the students to conduct much more activities in future. He spoke about the importance of mathematics.

The inauguration function was ended with vote of thanks by Student representative **Ms. Harshini**, II M.Sc Mathematics.

The inauguration was soon followed by the technical session.

The technical session -1 was given by the chief guest **Dr.Sanjit Das**, Assistant Professor, School of Advanced Sciences, VIT Chennai on the topic "Introduction to Differential Geometry".

The technical session -2 was given by the resource person **Dr. Saranya**, Assistant Professor, Department of Mathematics, CMR University on the topic Linear Algebra for Competitive Exams in the online mode.

As part of the celebrations various Inter departmental Mathematical events like Math quiz, Matchy Matchy, Poster Presentation, Connections, Scape the field, Fortune sphere were conducted by the UG and PG students of Mathematics in the Vallabacharya Auditorium and prizes were distributed to the winners.

Many students participated in the hybrid mode.

The students from various departments participated in the above programmes with great zeal and enthusiasm and enjoyed the programmes.



Highlights of the Department

The Department is conducting the following events periodically to enhance the knowledge of students as well as faculties in emerging fields of research.

- National Conferences twice in a year
- Faculty Development Programme twice in a Year.
- > Student activities under BRAHMAGANITH- Mathematics club.
- Mathcipher- Annual intercollegiate students technical and cultural fest.
- > Release of Proceedings of the conferences.
- ➤ C⁴ Chase, Crack, Conquer, CSIR-NET free online coaching class for NET aspirants of Mathematical Sciences.
- Release of Annual Newsletter- Mathphile.

Future Prospects

- Interdisciplinary research
- Consultancy services
- Outreach programs
- International linkages
- * Faculty enrichment programs
- **❖** SELF LEARNING
- ❖ Introduction of New Programmes like M.Sc Mathematics with Information Security M.Sc., Mathematics with honours, M.Sc., in Mathematics,

Industrial Mathematics with OR Specialization, Post graduate diploma courses in statistics quality control