




ZAKIR HUSAIN DELHI COLLEGE

(University of Delhi)

Faculty Details

DR.	VENU	GOPAL	
Designation	ASSISTANT PROFESSOR (Level - 11)		
Address	Department of Mathematics, Zakir Husain Delhi College, University of Delhi, Jawahar Lal Nehru Marg, New Delhi-110002		
Phone Number	Office 011-23232218, 23233420		
Email Id	venu.gopal@zh.du.ac.in		Ph.D (DU); Post-doc (Brown University, USA and USTC, China); CAS-PIFI Fellow
Educational Qualification			
B.A.(Hons.) Mathematics	Zakir Husain College, University of Delhi	2003	
M.A. (Mathematics)	Zakir Husain College, University of Delhi	2005	
Ph.D. Mathematics	Department of Mathematics, University of Delhi	2013	
Career Profile			
<ul style="list-style-type: none">Working as an Assistant Professor in the Department of Mathematics, Zakir Husain Delhi College, University of Delhi since 31st March 2023.Worked as an Assistant Professor in the Department of Mathematics, Dr. Bhim Rao Ambedkar College, University of Delhi from 26th August 2019 to 31st March 2023.			

- Worked as an Assistant Professor in Cluster Innovation Center, University of Delhi, Delhi from 14th September, 2017 to 6th January, 2018.
- Worked as a Post-doctoral researcher (in the scientific computing group of Division of Applied Mathematics, Brown University, USA) hosted by the **School of Mathematical Sciences, University of Science and Technology of China, Hefei on Chinese Academy of Sciences (CAS) President's International fellowships for Post-doctoral researcher** from June 1, 2015 to May 31, 2017.
- Worked as a Post-doctoral Fellow in the **Division of Applied Mathematics, Brown University, USA from 1st July 2013 to 30th April 2015.**
- 01 year 06 months under-graduates teaching experience in Zakir Husain college, University of Delhi, Delhi, India as an Assistant Professor (2005-07) on ad hoc basis and more than 5 years as a visiting faculty in different colleges of University of Delhi and NSUT.

Administrative Assignments

Zakir Husain Delhi College

- Assistant Nodal Officer (Admission) (2023-24)
- Member, SEC-VAC Committee,
- Member, Website Monitoring Committee
- Member, Alumni Committee
- Member, Time table Committee
- Member, IT Committee

Areas of Interest / Specialization

- Discontinuous Galerkin's methods for time dependent PDEs.
- Numerical Solutions for Hyperbolic conservation laws.
- High Order Numerical methods for the solution of nonlinear time-dependent partial differential equations (mainly wave equation type).
- Finite difference methods for partial differential equations.
- Spline approximations for partial differential equations.

Subjects Taught

DSC - Ordinary Differential Equation (Sem II); Calculus(Sem II); Algebra(Sem I); Group Theory

GE - Linear Algebra; Calculus; Differential Equation; Elements of Analysis

SEC - Mathematical Typewriting Software: LaTeX; Computer Algebra Systems; Statistical Software : R; Essentials of Python; Transportation and Network Flow Problems; Document Preparation and Presentation Software;

VAC - Vedic Mathematics - I, Vedic Mathematics - II

Publications Profile (Selected)

1. R.K. MOHANTY and VENU GOPAL, High Accuracy Cubic Spline finite difference approximation for the Solution of One-space Dimensional Non-linear Wave Equations. **Applied Mathematics and Computation**, 218 (2011) 4234-4244. Publisher - Elsevier.
2. R.K. MOHANTY and VENU GOPAL, High Accuracy Arithmetic Average Type Discretization for the Solution of Two-space Dimensional Non-linear Wave Equations. **International Journal of Modeling, Simulation and Scientific Computing**, Vol 3, No.2 (2012) 1150005 (18pages). Publisher–World Scientific.
3. R.K. MOHANTY and VENU GOPAL, An Off-step Discretization for the Solution of 1-D Mildly Non-linear Wave Equations with Variable Coefficients. *Journal of Advanced Research in Scientific Computing*, Vol 4, Issue. 2 (2012) pp.1-13.
4. R.K. MOHANTY and VENU GOPAL, A New Off-step High Order Approximation for the Solution of Three-space Dimensional Nonlinear Wave Equations. **Applied Mathematical Modelling**, Vol. 37, issue 5, (2013) pp. 2802-28015. Publisher - Elsevier.
5. R.K. MOHANTY and VENU GOPAL, A Fourth-order Finite Difference Method Based on Spline in Tension Approximation for One-space Dimensional Second-Order Quasi-linear Hyperbolic Equations, **Advances in Difference Equation**, 2013: 70, 20 pp. Publisher - Springer.
6. VENU GOPAL, R.K. MOHANTY and NAVNIT JHA, A New Non-polynomial Spline in Compression Method of $O(k^2+h^4)$ for the solution of 1D Wave Equation in Polar Coordinates. *Advances in Numerical Analysis*, 2013 (2013), Article ID 470480, 8 pages.
7. R.K. MOHANTY and VENU GOPAL, High Accuracy Non-polynomial Spline in Compression Method for One-space Dimensional Second Order Quasilinear Hyperbolic Equations with Significant non-linear first order space derivative term, **Applied Mathematics and Computation**, 238 (2014) 250-265. Publisher - Elsevier.
8. VENU GOPAL, R.K. MOHANTY and L.M. SAHA, A New High Accuracy Non-polynomial Tension Spline Method for the Solution of One Dimensional Wave Equation in Polar Co- ordinates. **Journal of Egyptian Mathematical Society**, 22 (2014) 280-285. Publisher - Elsevier.
9. NAVNIT JHA, VENU GOPAL and BHAGAT SINGH, A Family of Compact Finite Difference Formulations for Three-Space Dimensional Nonlinear Poisson's Equations in Cartesian Coordinates, **Differential Equations and Dynamical Systems**. (2016). **Publisher- Springer**.
10. NAVNIT JHA, VENU GOPAL and BHAGAT SINGH, Geometric grid network and third- order compact scheme for solving nonlinear variable coefficients 3D elliptic PDEs, **International Journal of Modeling, Simulation and Scientific Computing**, Vol 9, No.6 (2018) 1850053 (18pages). Publisher–World Scientific.

11. NAVNIT JHA, **venu GOPAL** and BHAGAT SINGH, A third-order accurate finite difference method and compact operator approach for mildly nonlinear two spatial dimensions elliptic BVPs with integral form of source term, **Advances in Intelligent Systems and Computing** (2019). Publisher- Springer.

Conference Organization/ Presentations (in the last five years)

- Invited talk in the Annual Conference of ISMMACS and International Conference on Differential Equations: Theory, Computation and Applications organised by the Department of Mathematics, South Asian University, New Delhi, during 29 November - 1 December, 2024.
- Invited as resource person to deliver an online lecture titled “Discontinuous Galerkin Method for Hyperbolic Equations” in the Workshop on “Recent Development of Mathematical Sciences on Biological and Dynamical Systems with Fuzzy and Fractional Environments”, organized by the Department of Mathematics, Mahadevananda Mahavidyalaya, from 19 Jun. 2024 to 29 Jun. 2024.
- Invited by the Department of Mathematical Sciences, National Chengchi University, Taipei City, Taiwan R.O.C to visit the department for prospective collaboration during October 15 to 20, 2023 and delivering a talk on October 16 in the department.
- Invited as a speaker in the International Symposium on Applied Mathematics and Soft Computing on January 25th, 2024 held during International Conference on computational and Mathematical Modelling, January 24-26, 2024 organised by The Center for Mathematical Modelling, Department of Mathematics, University of Colombo, Sri Lanka.

Awards and Distinctions

- **Fellowship:** Selected for ‘**The Chinese Academy of Sciences (CAS)** President's International Fellowship Initiative for Postdoctoral Researchers for 2015-17.
- **Fellowship:** Selected by **Indian Institute of Science, Bangalore**, India and **ICERM, Brown University, USA** for post-doctoral studies under Indo-US project (<https://icerm.brown.edu/vi-mss>).
- **Grant:** Financial support of USD 700 from **University of Pittsburgh, USA** to attend International workshop: Advances in Nonlinear Analysis, 2014 (March 2014).
- **Grant:** National Board Higher Mathematics, Department of Atomic Energy, Govt. of India and University of Strathclyde grant to visit **Scotland, UK** (June 2013).

- **Grant:** Council for Scientific and Industrial Research, Govt. of India travel grant to visit **Turkey** (Oct 2012).
- **Grant:** University of Delhi, Delhi, India travel grant for Research Scholar to visit **Greece (Aug 2012)**. **Grant: Department of Science and Technology, Govt. of India and BIT grant to visit Technical University of Denmark (Aug 2012)**.
- **Grant:** by Technion - Israel Institute of Technology to visit **Israel** (Sep 2011).
- **Award:** Got **2nd highest College Award “College Crest”** in 2003.
- **Award: Certificates of merit** from Zakir Husain College, University of Delhi in graduation and post-graduation.

SCHOLASTIC ACHIEVEMENT AND RECOGNITIONS

- **Letter of Appreciation** from the Principal, Dr. Bhim Rao Ambedkar College, University of Delhi in 2021 for the involvement in college administration and academic activities.
- Top Rank Holder in **Graduation** as well as in **Post-graduation** in Zakir Husain

Association With Professional Bodies

1. Life Member, International Society of Difference Equations, USA.
2. Member, International Association of Engineers, Hong Kong.
3. Member, IAENG Society of Scientific Computing, Hong Kong.
4. Life Member, Indian Society for Mathematical Modeling and Simulation, IIT Kanpur, India.

Other Activities

REVIEWER OF JOURNALS:

- Numerical Methods for Partial Differential Equations (Wiley)
- MethodsX (Elsevier)
- Applied Mathematics and Computations (Elsevier)
- Differential Equations and Dynamical Systems (Springer)
- International Journal of Applied and Computational Mathematics (Springer)
- Technical Transactions (Cracow University of Technology Press)
- American journal of Computational Mathematics.
- Many conference proceeding papers.

FDP COMPLETED:

- Participated in Faculty Development Programme: National Webinar entitled “ICT Enabled Higher Education in India: Challenges and Opportunities” organized by Guru Angad Dev Teaching Learning Centre SGTB Khalsa College, University of Delhi under the Pandit Madan Mohan Malaviya Mission on Teachers and Teaching (PMMMNTT) of MHRD held on April 15, 2020.
- Successfully completed “three” Week Online Certificate Course: SLC-Course01 on "Introduction to Computer Algebra System: Maxima (An Open Source Software)" from June 27, 2020 – July 18, 2020. Total Duration of the Course: 30 Hours, Hansraj College, University of Delhi, Delhi.
- Faculty Development Programme (FDP) on ‘FDP on Managing online classes and co-creating MOOCs’ organized by Teaching Learning Centre, established under the Pandit Madan Mohan Malaviya National Mission on Teachers and Training scheme of MHRD, Ramanujan College (University of Delhi), 25th July 2020 to 10th August 2020 and obtained grade A+.
- Two-Week Faculty Development Programme (FDP) on ‘Quantitative Methods for Data Analysis’ organized by Teaching Learning Centre, established under the Pandit Madan Mohan Malaviya National Mission on Teachers and Training scheme of MHRD, Ramanujan College (University of Delhi), 12th -25th August 2020. Graded A+. Successfully completed a 4-Week Induction/Orientation Programme for "Faculty in Universities/Colleges/Institutes of Higher Education" from June 26 - July 24, 2020 and obtained grade A+.
- 2 - Week Faculty Development Programme on "RESEARCH METHODOLOGY" ,Teaching Learning Centre, Ramanujan College University of Delhi under the aegis of MINISTRY OF HUMAN RESOURCE DEVELOPMENT PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING, October 1-15, 2020.
- Science Academies Online Lecture Workshop On Frontiers in Science & Engineering - Opportunities for Graduates, Deen Dayal Upadhyay College, University of Delhi, September 14-19, 2020.
- Virtual Topical Workshop on Advances and Challenges in Hyperbolic Conservation Laws, ICERM, Brown University, USA, May 17- 21, 2021.
- 4-Week Faculty Induction/Orientation Programme for “Faculty in Universities/Colleges/ Institutes of Higher Education” ,Teaching Learning Centre, Ramanujan College University of Delhi under the aegis of MINISTRY OF HUMAN RESOURCE DEVELOPMENT PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING, June 22 - July 21, 2023 with Grade A+.

- Two weeks Interdisciplinary Refresher Course in “ADVANCED RESEARCH METHODOLOGY” Teaching Learning Centre, Ramanujan College University of Delhi under the aegis of MINISTRY OF HUMAN RESOURCE DEVELOPMENT PANDIT MADAN MOHAN MALAVIYA NATIONAL MISSION ON TEACHERS AND TEACHING, June 22 - July 21, 2023 with Grade A+.
- Completed the NEP 2020 Orientation & Sensitization Programme under Malaviya Mission Teacher Training Programme (MM-TTP) of University Grants Commission Organized by Centre for Professional Development in Higher Education (UGC-MMTTC), University of Delhi from 8th October 2024 to 17th October 2024.

COMPUTER SKILLS

Software Packages: Matlab, Mathematica, Maple, Statistical software : R, LaTeX.

Programming Languages: FORTRAN, C, C++, Python.

EXTRA CURRICULAR ACTIVITIES AND ACHIEVEMENTS

- Elected as Representative of Dept. of Mathematics, University of Delhi in 2004.
- Elected as Secretary, Dept. of Mathematics, Zakir Husain College, University of Delhi in 2003.
- Elected as Student Editor of College Science Magazine “Spectrum” in 2003.
- Represented Zakir Husain College in Chess at University level.
- Many prizes at school level poem recitation, calligraphy, sports etc.