

**HANS RAJ COLLEGE**  
**UNIVERSITY OF DELHI**  
**FACULTY PROFILE**



Title	<b>Prof. (Dr.)</b>	First Name	<b>Jyoti</b>	Last Name	<b>Bhola</b>
Designation	<b>Professor</b>				
Address	<b>Department of Mathematics, Hans Raj College, University of Delhi, Delhi-110007</b>				
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Educational Qualifications					
Degree	Institution			Year	
Ph.D.	<b>University of Delhi</b>			<b>2010</b>	
M.Phil.	<b>University of Delhi</b>			<b>2007</b>	
PG	<b>St. Stephen's College, University of Delhi</b>			<b>2005</b>	
UG	<b>Janaki Devi Memorial College, University of Delhi</b>			<b>2003</b>	
Areas of Interest / Specialization					
<ul style="list-style-type: none"> <li>● Operator Theory (Functional Analysis)</li> <li>● Mathematical Modeling using Differential equations</li> </ul>					

Teaching experience: 16 years

- Jesus and Mary College, University of Delhi (25.7.2005 - 16.8.2005)
- Miranda House, University of Delhi (17.7.2006 - 17.8.2006)
- Hansraj College, University of Delhi (18.8.2006 – till date)

Date of permanent appointment: August 18, 2006

### Subjects Taught

#### UG level

Real Analysis  
Calculus  
Differential equations and Mathematical modeling  
Algebra (Rings and Vector Spaces)

#### PG level

Functional Analysis

### Software knowledge

Mathematica, MATLAB, Maxima

### Publications Profile

#### ***Research papers published in Refereed/ Peer Reviewed Journals***

1. Essentially slant Hankel operators, Bulletin of the Malaysian Mathematical Sciences Society, Malaysia, Vol. 31, No. 2(2008), 165–173. **(SCIE/ SCOPUS/zbMATH indexed)**
2. Generalized essentially slant Hankel operators, International Journal of Pure and Applied Mathematics, Bulgaria, Vol. 47, No. 2(2008), 165–173. **(SCOPUS indexed)**
3.  $k$  th-order slant Hankel operators, Mathematical Sciences Research Journal, USA, Vol. 12, No. 3(2008), 53–63. **(SCOPUS indexed)**
4. The compression of a  $k$  th-order slant Hankel operator, Ganita, India, Vol. 59, No. 1(2008), 1–11. **(UGC CARE listed at no. 17922)**
5. Essentially slant Toeplitz operators, Banach J. Math. Anal., Iran, Vol. 3, No. 2(2009), 1–8. **(SCIE/ SCOPUS/zbMATH indexed)**
6. Spectrum of a  $k$  th-order slant Hankel operator, Bulletin of Mathematical Analysis and Applications, Vol.3, Issue 2 (2011), 175-183. **(ESCI/Zentralblatt/MathSciNet indexed)**

7. Weyl's theorem for a class of operators, *Int. J. Contemp. Math. Sciences*, Vol.6 (2011), No. 25, 1213-1220. **(Peer-reviewed/ Scilit indexed)**
8. Essentially  $\lambda$ -Hankel operators, *Journal of Mathematics*, Vol.2013, Article ID 865396, 5 pages. **( SCIE/ SCOPUS/zbMATH indexed)**
9. Enhanced Properties of SAW Device Based on Beryllium Oxide Thin Films, *Crystals* **2021**, *11*, 332. **(SCIE/SCOPUS indexed)**
10. Corona mahamari ke dauran digital vikas, *Samsamyik Srijan*, Year -11, No. 21, January-March 2021 issue (ISSN: 2320-5733). **(UGC CARE listed at no. 61)**
11. A study on use of mathematical programs for design of electronic circuits in cybernetic-physical learning environment, *International Journal of Information and Education Technology*, 11(11), 504-509 (2021) **(SCOPUS indexed)**
12. Trajectory of Corona Epidemic in India: An initial phase predictive mathematical model and the present status, 4(2): 2020. ABBA.MS.ID.000588. DOI: 10.33552/ABBA.2020.04.000588. *(Published: July 2021)* **(Peer-reviewed/Scilit indexed)**
13. A Mathematical Reflection of COVID-19 and Vaccination Acceptance in India, *Asian Pacific Journal of Health Sciences*, 8(3), 150–157 (2021). **(UGC CARE listed at no. 111)**
14. A comparative study on the use of physical and e-labs: a case study at University of Delhi, Samridhhi, Institute of Technology, School of Management Sciences, Lucknow, Vol 14 (1), 2022. **(UGC CARE listed at no. 382)**
15. A Structural Model of Teacher Learning, Satisfaction, Attitude and Confidence in Faculty Development Programmes. *Vision*, SAGE, July 2022. doi:10.1177/09722629221107229 **(SCOPUS indexed)**

### **Books and Chapters**

- Authored an e-lesson entitled "Automorphism groups, characteristic subgroups and commutator subgroup" for the paper C12 (Group Theory II- Algebra IV) published by ILLI, University of Delhi (ISSN: 2349-154X, ISBN: 978-93-86264-07-7, Published in January 2017).
- Authored a chapter entitled "The Konigsberg Bridge Problem: A Matrix Approach" in *Topics in Mathematical Sciences*, published by CPDHE, University of Delhi in 2017 (ISBN: 978-81-93451-96-0).
- A Comprehensive Textbook of Mathematics for Class XII- Volume 1, March 2018, (ISBN: 9789387702462), Taxmann Publications (P.) Ltd., India.
- A Comprehensive Textbook of Mathematics for Class XII- Volume 2, April 2018, (ISBN: 9789387702745), Taxmann Publications (P.) Ltd., India.
- CBSE Exam Cracker (Mathematics) for Class XII, December 2018, (ISBN: 9789388266901), Taxmann Publications (P.) Ltd., India.

## **Other Articles**

- Co-authored an article entitled “Corona Epidemic in Indian Context: Predictive Mathematical Modelling”, archived under medRxiv, April 2020.

[ medRxiv preprint doi: <https://doi.org/10.1101/2020.04.03.20047175> ]

- Co-authored an article entitled “Assessing the impact of lockdown on undergraduate teaching: a survey based approach”, published in Digital Learning Magazine, Elets, May 2020

[[Assessing the impact of lockdown on undergraduate teaching: A survey based approach](#) ]

- Co-authored an article on “Viewing Corona Pandemic with Mathematics glasses: an overview”, published in Hans Shodh Sudha, Hansraj College, University of Delhi, Vol 1, July-September 2020. [<https://hansshodhsudha.com/first-second-issues/New%20Hansraj%20College%20Book-1-81-87.pdf>]

## **Conferences/ Workshops/FDPs( Organization/ Paper Presentation / Participation)**

1. Participated in the National Symposium on Recent Advances in Optimization Theory and Applications held during Oct 27-28, 2006 at Academic Research Center, University of Delhi.
2. Participated in the three-day UGC National Seminar on “21st Century Renaissance: Transformation in Technology and Life” held at Delhi College of Arts and Commerce during April 2-4, 2007.
3. Participated in the National Workshop on Analysis held at the Department of Mathematics, University of Delhi, during Sep 27-28, 2007.
4. Participated in International Conference on Operator Theory and Related Areas held at the Department of Mathematics, University of Delhi, during January 9-12, 2008.
  - Was a member of the Academic Programme and Publication Committee in the conference.
  - Presented a paper entitled “Essentially Slant Toeplitz operators” in the same.
5. Participated in Advanced Training in Mathematics for Lecturers (ATML) in Real Analysis held at the Department of Mathematics , University of Delhi, during March 22- April 3, 2010.
6. Participated in the National Workshop on ‘Differential Equations, Computing and Modelling’ conducted at the Department of Mathematics, University of Delhi, during Dec 20-24, 2010.
7. Participated in the International Conference on Innovating Education in Asia held at Hans Raj College, University of Delhi, during Oct 31- Nov 02, 2015.
  - Presented a paper entitled “To teach is to learn twice- An article on innovative teaching in Mathematics”.

8. Participated in the seven days Workshop on 'Integrating ICT (Information and Communication Technology) in Teaching and Learning' held at Hans Raj College, University of Delhi, during Dec 11-18, 2015.
9. Participated in the DBT-sponsored seminar on 'Physics of stars' held at Hans Raj College, University of Delhi, on April 1, 2016.
10. Coordinated a one day workshop on LaTeX organized by the Department of Mathematics, Hans Raj College, University of Delhi, on April 9, 2016.
11. Participated in Capacity Building Workshop on e-content creation in Mathematics held at ILL, University of Delhi, on October 28, 2016.
12. Organized a seminar on "Management skills in office administration-Practices and Advances" for the non teaching staff of colleges of Delhi University under IQAC, Hansraj College during Nov 22-23, 2016.
13. Participated as a judge for slogan competition on World Water Day held on March 22, 2017 at Hansraj College, University of Delhi.
14. Participated in the seminar on "Radiation hazards and monitoring -techniques and materials" organized at the Department of Physics and Electronics, Hansraj College on April 10, 2017.
15. Participated in Faculty Development Programme on "Digital Literacy: An introduction to ICT skills" at Department of Physics and Electronics, Hansraj College during Sep 15-17, 2017.
16. Coordinated the fourth Self- Defense Winter Camp conducted by Self Defense Wing of Special Police Unit For Women and Children from December 12, 2017 to January 11, 2018 at Hansraj College, University of Delhi.
17. Convened a two - days' workshop on "Mathematica: A Tool for Computational Analysis" organized by the Department of Mathematics, Hansraj College, University of Delhi, during March 10-11, 2018.
18. Participated in a one day workshop on "How to get research papers published in right journals" organized by Hansraj College in collaboration with Grace India Educational Charitable Trust, Delhi on October 27, 2018.
19. Participated in a one-week Faculty Development Programme on "Software packages for Mathematical Sciences" from Nov 14-19, 2018 at MHRFDC, Hansraj College, University of Delhi.
20. Participated in a one-week Faculty Development Programme on "Understanding the connection of Mathematics with the world around us: an application based learning" during June 20-26, 2019 at MHRFDC, Hansraj College, University of Delhi.
21. Contributed as Co-Convener of one week Faculty Development Programme on "MOOCs, E-content development and Research design" organized by Sri Aurobindo College (Evening) in collaboration with MHRFDC, Hansraj College, University of Delhi during November 16- 22, 2019.
22. Contributed as Programme Co-Coordinator in the National Leadership Summit organized by MHRFDC and IQAC, Hansraj College during December 6-7, 2019.
23. Contributed as Programme Coordinator in one day National Webinar on "Teachers and Technology: The Road Ahead" organized by MHRFDC, Hansraj College on April 25, 2020.

24. Contributed as Programme Coordinator in one week online Faculty Development Programme on "Mathematica- A system for Modern Technical Computing " organised by MHRFDC, Hansraj College, University of Delhi during August 21-26, 2020.
25. Convened a two-week Faculty Development Programme on "Transformation in Higher Education: Issues and Road Ahead" organized by Government Degree College for Women, Anantnag in collaboration with MHRFDC, Hansraj College during September 28- October 12, 2020.
26. Participated in a two-week Faculty Development Programme on " Biomathematics" organized by PGDAV College, University of Delhi in collaboration with MHRFDC, Hansraj College during October 15-28, 2020.
27. Coordinated a two-days online training programme on "ICT Skills for Office Management" for the non teaching staff of colleges of Delhi University under IQAC, Hansraj College during Jan 21-22, 2021.
28. Coordinated a two-days online training programme on "Stress Management" for the non teaching staff of colleges of Delhi University under IQAC, Hansraj College during Jan 28-29, 2021.
29. Participated in a one-week online Faculty Development Programme on "Multivariate analysis and Structural Equation Modeling" organized by Shivaji College, University of Delhi in collaboration with MHRFDC, Hansraj College during November 27- December 03, 2021.
30. Coordinated a two weeks (online) workshop on "Vedic Mathematics" organized by Shiksha Sanskriti Uthhan Nyas in collaboration with MHRFDC, Hansraj College during December 02- 13, 2021.
31. Coordinated a three-days Lecture Series on "NEP2020: Delhi University Undergraduate Curriculum Framework 2022" organised jointly by ILLI, University of Delhi and MHRFDC, Hansraj College during January 27-29, 2022.
32. Participated in one day workshop on "Accelerate your research using Elsevier's Scopus" organised by University of Delhi in collaboration with Elsevier Science on February 11, 2022.
33. Participated in two days online workshop on "Modeling Biological Systems" organised by the Centre for Bioinformatics and Computational Biology, Ashoka University under DBT, Govt of India during May 26-27, 2022.

#### Orientation/ Refreshers Courses attended

- Orientation Programme OR-61, CPDHE (October 03-31, 2009)
- Refresher Course in Mathematics, Operational Research and Computer Science, CPDHE (December 12-31, 2011)
- Refresher Course in Mathematical Science, CPDHE, University of Delhi (June 06-27, 2017)
- Refresher Course on Calculus, ARPIT, MHRD, Govt. of India (Completed in March 2019)

## Research/ Innovation/ Undergraduate/ Internship Projects

- UGC- sponsored Minor Research Project entitled “ A study of slant Hankel operators” (Date of sanction: March 2010, Date of final report submission: Jan 2012)
- Delhi University- sponsored Innovation project entitled “Critical and Scientific analysis on use of alternative medicines with practical approach and case studies” (Project Code: Hansraj College-313, Status: Completed in November 2016)
- Supervised the DST-sponsored (INSPIRE undergraduate programme) entitled “A study of Dengue and Chikungunya pattern across Delhi: a mathematical approach” during June-July 2018. ( Sanctioned to Ms. Yukti, Student, B.Sc(Hons.) Mathematics, Jesus and Mary College, University of Delhi)
- Mentored the two week internship programme of five M. Ed. Students of Jamia Millia Islamia at MHRFDC, Hansraj College during February 1- 12, 2021 under Field Internship Programme in Institutions for Teaching Subject-based Specialization.

## Academic awards and distinctions

- Receiver of M.Bholanath Gold Medal, University of Delhi (2003)
- Receiver of Mrs. Manohar Lal Medal ( ‘the most talented student of Mathematics’ award), Janki Devi Memorial College, University of Delhi (2003)
- JAM qualified with Rank 1 (IIT, Delhi) (2003)
- JRF awardee (2005)
- Received the best student in M.A/M.Sc. Mathematics award, St. Stephen’s College, University of Delhi (2005)
- Awarded the “Best Researcher Award-2018” on October 27, 2018 by Grace India Educational Charitable Trust, at Hansraj College, University of Delhi.
- Awarded the “Best Teacher Award 2019”, by Institute of Scholars, Karnataka, India.

## Contribution To Societies/ Committees/ Administrative work in College

### Present administrative positions:

- **Serving as Coordinator (since April 1, 2019 till date) of Mahatma Hansraj Faculty Development Centre, Hansraj College;** a centre that runs under the prestigious PMMMNMTT Scheme of MoE, Govt. of India.  
The objective of the centre is to identify skill deficit among teaching community and organize national/international level programs like Faculty Development Programs, Induction Programs, Workshops, Symposia and Seminars etc. to bridge this gap.  
The centre also runs the multidisciplinary research journal of Hansraj College, Hansshodhsudha under its umbrella.
- **Course Advisor for Community College Scheme Courses** of UGC running at Hansraj College
- **Coordinator of e-Samvaad Centre,** for digital content creation under the aegis of MHRFDC, Hansraj College
- **Associate Editor** of the college research journal Hansshodhsudha

- **Nodal Officer (SPOC) for SWAYAM** Local Chapter, Hansraj College
- **Nodal Officer for digital infrastructure support under DUDISCAD** scheme of University of Delhi
- **Coordinator of Skill Hub Centre** at Hansraj College, under PMKVY of National Skill Development Corporation, Govt of India (2021-22)
- Member, IQAC
- Member, NEP Task Force, Hansraj College

**Other assignments (since 2016):**

1. Pi, The Mathematics Society: Convener (2017-18), Member (2016-17), Member (2018-19), Member (2019-20)
2. Women Development Cell: Member (2019-20), Convener (2017-18), Member (2016-17)
3. Gender Equality Cell: Convener (2017-18)
4. Students' Welfare Society: Member (2017-18, 2018-19)
5. Haritima, Environment Awareness Society: Member (2017-18)
6. 2018-19: Teacher in charge, Department of Mathematics, Hansraj College  
Member of Admission Committee, Attendance Committee, Students' Welfare Committee, Purchase Committee, Hostel Committee, Discipline Committee.
7. ICT Enabling Committee/Portal Committee: Member (2019-20)

**Association With Schools/ Other Universities/Professional Bodies**

- Life Member of Bharata Ganita Parisad, University of Lucknow.
- Professional Member of Institute of Scholars, Karnataka, India.
- Reviewer of International Journal of Basic and Applied Sciences, InSc, Karnataka, India.
- Member of the Academic Experts Committee of The Mathematics Teachers' and Students' Foundation, New Delhi, India.
- Life Member of Mathematics Teachers' Association (India).
- Visited Kulachi Hansraj Model School (Ashok Vihar) as subject expert for TGT Mathematics interviews on May 21, 2016.
- Visited SLS DAV Public School (Mausam Vihar) as subject expert for TGT&PRT Mathematics interviews on June 18, 2016.
- Visited Bal Bharati Public School (Pitampura) as a judge for the sub-themes "Mathematical Solutions in daily life" and "Transport and Communication" in the CBSE Regional Science Exhibition held during Dec 14-17, 2016.
- Served as a resource person in Mathematica-lab sessions in the ISPIRE Programme (DST) for school students, held at Hansraj College, University of Delhi, during December 12-16, 2017.



- Contributed as a panellist in the Panel discussion on ‘Motivating Students to Pursue Studies in Higher Mathematics’ at IMM Conclave, 2018 (Modern School, Barakhamba Road) on October 14, 2018.
- Visited Darbari Lal DAV Model School (Pitampura) as subject expert for PRT Mathematics interviews on May 11, 2019.
- Visited Kulachi Hansraj Model School (Ashok Vihar) as subject expert for TGT Mathematics interviews on May 18, 2019.
- Visited DAV Public School (Sahibabad) as subject expert for TGT Mathematics interviews on June 3, 2019.
- Visited DAV Public School (Sec 49, Gurugram) as subject expert for TGT Mathematics interviews on June 24, 2019.
- Served as a resource person in one week Faculty Development Programme on “Entailing vitality of ICT in Capacity Building of Faculties” (August 17 - 22, 2019) and took a session on “Government’s initiatives towards promotion of e-learning” on August 22, 2019 at Dr. Shyama Prasad Mukherjee University, Ranchi (Jharkhand).
- Contributed as a panelist for the Discussion forum on ‘*Mathematics education (higher education) during the pandemic: Issues, challenges, and possible solutions*’ in MTA Second Annual (online) conference 2020 on *Mathematics Education in Times of the COVID-19 Pandemic* hosted on September 5-6, 2020.
- Visited Darbari Lal DAV Model School (Pitampura) as subject expert for TGT and PRT Mathematics interviews on May 14, 2022.

Certified that the information given above is true and verifiable through certificates and supporting documents.

Prof. (Dr.) Jyoti Bhola

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